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COURSE OF STUDY

FOR

THE PUBLIC SCHOOLS

OF THE

CITY AND COUNTY OF SAN FRANCISCO.

SAN FRANCISCO:
JONH H KNARSTON Printer, 529 Washington Street.
1889.

COURSE OF STUDY

FOR

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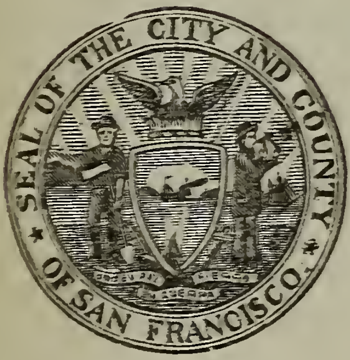
OF THE

CITY AND COUNTY OF SAN FRANCISCO.



SAN FRANCISCO:
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At the close of the Course of Study for each grade, will be found a list of books and supplies, which is headed "To be purchased by the teacher."

Pupils shall supply themselves with the books and supplies found under list headed "To be purchased by the pupil."

Every class-teacher is required to purchase the list found under her respective grade, and keep the same on her desk for reference and use in the class-room.

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1889

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Tams, Stone, Wilson, Dalton, Anderson

CREDENTIALS AND QUALIFICATIONS OF TEACHERS

Goad, Wilson, Wempe, Dalton, Anderson

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New City Hall
Wednesdays from 3 to 4 P. M.

J. W. ANDERSON
MADISON BABCOCK
THOMAS E. KENNEDY
MISS REBECCA F. ENGLISH
} New City Hall
Every day from 3:30 to 4:30 P. M.

COURSE OF STUDY.

RECEIVING CLASS.

The object of this class is the preparation of the pupils or entrance to the First Grade. The work prosecuted in the class is of a character similar to that of the First Grade; and when pupils are reasonably well prepared, they should be, at once, placed in the First Grade.

The average child, if properly taught, should be able to accomplish the work assigned for this Class in one term. For the conduct of the work in this class, observe the following directions.

LANGUAGE.

Have familiar talks, in pleasant conversational tone, to enable pupils to gain freedom of expression.

Require complete statements from pupils in reference to their names and addresses, and about things which they see and do.

Require reproduction, orally, of short stories read or told to them by the teacher.

Memorize short gems of prose and poetry.

Name the parts of the body, as head, arms, etc., and their position as to left, right.

Teach the organs of sense and the location of the same.

Teach the names of the days of the week.

READING.

Teach, by means of the blackboards, so that they may be recognized at sight, at least forty or fifty words, selected from the first twenty pages of the First Reader.

Put the words selected upon the blackboards in both script and printed form.

Read the words learned by placing them on the board in sentences or phrases, underlining the phrases.

Teach *a*, *an*, and *the* in phrases; as *a book*, *the book*, *an apple*, *the apple*.

WRITTEN WORK.

Require pupils at first to trace words on the board or on their slates, in order to gain freedom of motion.

Copy words learned, from the board, in script, using ruled spaces on board and slates.

As soon as possible, copy sentences from the boards, using capital letters, periods and question marks.

Insist upon neatness. Teach pupils to write their names and addresses.

ARITHMETIC.

ORAL WORK.

Teach orally, by means of objects, the numbers from 1 to 10.

Teach all possible combinations of the numbers from 1 to 10, using counters.

Drill both with and without the counters. (Grube method.)

Give oral problems, using the above combinations.

Have pupils make original problems, using concrete numbers.

WRITTEN WORK.

Teach pupils to express numbers learned with neat figures.

Make groups of rings, or of pictures to illustrate the numbers represented by the figures.

Teach pupils to write the different combinations of the several numbers.

Teach pupils to add single columns on board or slates, the sums not to exceed 10.

Use the word "times" instead of the sign of multiplication.

Teach subtraction, the minuend not to exceed 9.

DRAWING.

Observe the directions given for this branch in the First Grade.

MUSIC.

Kindergarten Motion Songs.

PHYSICAL EXERCISE.

Have physical exercise every half hour, with windows and doors open, using arm movements and breathing exercises.

ORAL INSTRUCTION.

Teach the name, production, and use of surrounding objects.

MORALS AND MANNERS.

Teach self-control, and independence by encouraging true effort. Teach the value of cleanliness, industry, punctuality, politeness, honesty, obedience and patriotism.

KINDERGARTEN INSTRUCTION.

Apply the principles of the Kindergarten Instruction in teaching all subjects, as:

1. Proceed from the known to the unknown.
2. Proceed from the whole to the parts.
3. Learn to do by doing.

All Kindergarten work under the direction of the special Kindergarten teacher.

Use the six colored worsted balls, the sphere, the cube, and the cylinder, the colored sticks, the rings and the tablets for observation lessons to develop ideas of—

COLOR—Red, orange, yellow, green, blue and purple.

FORM—Sphere, cube and cylinder, and from these surfaces, faces, edges, lines, squares and the like. All new terms and all new shapes to be taken from the object.

MOTION, POSITION, ARRANGEMENT, LOCATION—Roll, slide; top, bottom; right, left; front, back, over, under; touching, apart; and the like.

PROMINENT QUALITIES OF OBJECTS—Rough, smooth, hard, soft; and the like.

SIZE—Large, small; long, short; and the like.

MATERIAL—Wool, wood, iron and paper.

OCCUPATION WORK—Sewing, weaving, paper-folding, and clay modeling to supplement work with solids, tablets, sticks, and rings, and to work out ideas gained through the use of these solids, etc.

MODELING—Solids in clay, and a few simple objects based on the type forms.

BOOKS.

TO BE PURCHASED BY THE TEACHER.

First Reader—California State Series.

TO BE PURCHASED BY THE PUPIL.

First Reader—Slate.

FIRST GRADE—TIME, ONE YEAR.

(Formerly Eighth Grade.)

READING.

First Reader, State Series, to Lesson LI.

Supplemental reading from readers in the school library.

Require pupils to memorize and recite short selections of prose and poetry.

Exercise pupils in reading with proper force, and in a natural tone. Require pupils to observe a proper position while reading.

Exercise pupils in voice culture for the purpose of developing pure tone and distinct utterance.

See that pupils are taught to comprehend the meaning of the text in their reading lessons.

Pay particular attention to the correction of errors, and to cultivation of proper habits of speech.

SPELLING.

Exercise pupils in spelling the words employed in their reading lessons.

Teach the use of words found in the reading lessons by employing them in the forming of sentences.

Make lists of words commonly used by children of this grade, and exercise in spelling such words, both orally and in writing.

Make lists of words usually misspelled by pupils in the class, and exercise frequently in spelling such words.

PENMANSHIP.

Teach, and drill often upon, the independent formation of letters, both small and capital.

Drill on the combination of letters into words.

Direct particular attention to the position of the body and to the manner of holding the pen or pencil.

Call special attention, by means of the blackboard, to errors in the formation of letters.

Teach pupils to write their names and addresses.

Use no copy-books in this grade.

LANGUAGE.

Require pupils to make oral compositions by reproducing the substance of their reading lessons, and by conversational exercises about what they do and see.

Require pupils to make use of complete sentences in expressing their thoughts.

Require pupils to copy reading lessons on their slates and on paper.

Exercise pupils in constructing short sentences, using words selected from the reading lessons.

Teach the proper use of capital letters, of the period and of the question mark, as employed in the Reader.

Exercise pupils in the detecting and correcting of faulty expressions.

Use "Common School English" as a reference book for the teacher.

ARITHMETIC.

Teach pupils to read and write numbers to 100.

Exercise pupils in counting objects, singly and by twos.

Teach addition, subtraction, multiplication and division without remainders, by means of objects and the abacus, to 20.

Teach the multiplication and division tables, simultaneously, to 5 times 4.

Exercise pupils in adding and subtracting by 1's, 2's, 3's, 4's and 5's, to 20.

Exercise pupils in adding single columns amounting to not more than 50.

Teach the Roman numerals corresponding to those used in the reading lessons.

Employ both abstract and concrete numbers.

KINDERGARTEN WORK.

Form lessons of Receiving Class reviewed and continued.

New Forms—Divided cubes. Use these to develop ideas of whole and parts, size, dimensions and the like, and for dictation and building exercises.

Tablet, Stick and Ring exercises continued. Symmetrical figures, borders and the like to be dictated with them and time allowed for inventive work.

Weaving given for dictation exercises, and to develop harmony and contrast of colors. Paper-folding continued.

Solids are to be modeled in clay.

Modeling clay of familiar objects based on the type forms.

GEOGRAPHY.

Develop in the mind of the child the idea of location, direction and distance, by the use of the tablets, and of the first four gift forms.

DRAWING AND MODELING.

Bradfield's Drawing Blank No. 1 in the hands of the pupil.

MUSIC.

Singing and playing symbolic songs and games, motion songs, and other songs as prescribed in the Kindergarten work.

PHYSICAL EXERCISES.

Have physical exercise at least three times each day; also, whenever pupils become weary or inattentive.

Let windows and doors be opened during these exercises.

Ventilate the class-rooms by lowering the windows.

MORALS AND MANNERS.

Teach pupils to be cleanly, neat, polite, obedient, industrious, punctual, trustworthy, honest, truthful, kind, and patriotic.

Use "Good Behavior" as a reference book for the teacher.

ORAL INSTRUCTION.

Employ object lessons developing facts as to name, production and use, of leather, wool, fur, sugar, cotton, sponge, air, salt, milk, oats, rice, wheat, oil, iron, cork, a book, a knife, a hat, a shoe, a wheel.

Hold familiar talks about the cat, the dog, the cow, the horse, the parts of the human body, and the senses.

Teach pupils to tell the time of day by the clock.

Use Calkins' Primary Object Lessons and Mrs. Mayo's Object Lessons as reference books for the teacher.

SEWING.

One lesson, one hour per week, or two lessons one-half hour each per week, devoted to cutting, basting, overhand-sewing and turning hems.

Explain the difference between selvedge and torn edge, and what a seam is.

Materials for Pupils.—Thimble, scissors, No. 8½ needles, No. 50 thread, both red and white.

SUGGESTIONS.

Pupils should learn to cut squares of different dimensions accurately. This may be done by following the kindergarten folding, measuring with a ruler, or by following drawn threads.

Fold the cloth back from the right side to the wrong side, having the fold uniformly one-fourth of an inch in width. Place the right sides together, having the folded edges even. Baste from right to left, through the middle of the folds in unequal stitches, the long stitches being on the side next the sewer. After pupils are able to cut and fold accurately, commence to sew from right to left by holding the cloth between the thumb and first finger of the left hand, never using a knot, but leaving an end of the thread one-half inch in length to be turned back on the seam and sewed under by the overhand stitches. At the end of the seam make no knot, but sew directly back four stitches and cut the thread. Smooth the seam with the back of the thumb nail or the thimble.

Squares of the same dimensions should be sewed together, first two squares, then four squares, then six and then eight squares, being careful to place the corners of the squares together so that the diagonals of the squares will form one continuous line.

In overhanding stripes or plaids they must match to a thread. At first sew a white and a colored square together. When more than two squares are sewed together, white squares should be placed corner to corner and colored squares corner to corner.

BOOKS.

TO BE PURCHASED BY THE TEACHER.

First Reader, California State Series—common school English—one set of Bradfield's Drawing Blanks—Good Behavior —one pair scissors.

TO BE PURCHASED BY THE PUPILS.

First Reader—California State Series—Bradfield's Drawing Blank No. 1.

SECOND GRADE—Time, One Year.

(Formerly Seventh Grade.)

READING.

First Reader, State Series, completed. Supplementa reading from readers in the School Library.

Require pupils to memorize short selections of prose and poetry.

Insist upon pupils reading with proper force, and in a natural tone.

Require pupils to observe a proper position while reading.

Continue to exercise pupils in voice culture for the purpose of developing pure tone and distinct utterance.

See that pupils comprehend the meaning of what they read.

Direct particular attention to the correction of errors, and to the cultivation of proper habits in reading.

SPELLING.

Drill, both orally and in writing, on words selected from the reading lessons.

Teach the correct use of words found in the reading lessons by employing them in sentences.

Make and drill upon lists of words usually misspelled by children in this grade.

Teach all new words phonetically.

Teach this branch both orally and by means of written exercises.

PENMANSHIP.

Exercises on the independent formation of letters, both small and capital, and upon the proper combination of letters into words.

Drill thoroughly upon the principles of the small letters.

Direct particular attention to the proper position of the body, and to the correct manner of holding the pen.

Call attention, by means of the blackboard, to errors in the formation of letters.

Use the Spencerian System of Copy-Books, edition of 1888, No. 1.

LANGUAGE.

Require pupils to talk about their lessons, and about what they see and do, using complete sentences to express their thoughts.

Require pupils to construct short sentences, using words from the reading lessons.

Require pupils to construct short sentences from words given by the teacher.

Require pupils to construct original sentences from words selected by themselves.

Require pupils to supply omitted words in sentences.

Require oral and written descriptions of pictures.

Require pupils to construct sentences from short, independent statements.

Continue to exercise and instruct pupils relative to the proper use of capital letters.

Exercise on the proper use of the period, the question mark, and the exclamation mark.

Require pupils to write short compositions, making the object lesson the basis of the work, that is, give a brief lesson on some of the objects hereinafter mentioned, and then require the pupils to write, on the following day, all that they can recall of the lesson given.

Exercise pupils in the correction of faulty expressions, particularly such as may be heard in the class.

Teach the following abreviations: Dr., St., Mr., Mrs., Cal., P. O., U. S.; and those of the months.

Use "Common School English" as a reference book for the teacher.

ARITHMETIC.

Teach pupils to read and write numbers to 1,000.

Teach addition, subtraction, multiplication, and division of whole numbers to 100.

Exercise in adding and subtracting by 1's, 2's, 3's, 4's, and 5's to 100.

Exercise pupils in examples in addition, using numbers embracing not more than three places.

Teach Roman numerals corresponding with the reading lessons.

Use both concrete and abstract numbers.

Exercise in the solution of simple problems; exercise in rapid addition of small numbers.

GEOGRAPHY.

Exercise pupils in determining direction and distance.

Have pupils draw maps of the school-room, including the furniture, and locate the four chief directions.

Locate and tell the direction from the school-house of Telegraph Hill, Lone Mountain, Twin Peaks, New City

Hall, United States Mint, Golden Gate Park, Fort Point, Shot Tower, Goat Island, Oakland and Mount Tamalpais.

Give conversational lessons about the places named in the preceding paragraph, including the occupations of the people. Make imaginary trips to the foregoing places.

DRAWING AND MODELING.

Bradfield's Drawing Blanks No. 2 in the hands of the pupil.

MUSIC.

Drill thoroughly on tones, the scale, and the scale intervals.

Chart practice by note. Teach four new primary songs.

PHYSICAL EXERCISES.

Physical exercises at least three times each day, or whenever the pupils become weary or inattentive.

Open the windows and the doors during this exercise.

Ventilate rooms by lowering the windows.

MORALS AND MANNERS.

Teach pupils to be cleanly, neat, polite, obedient, industrious, punctual, trustworthy, honest, kind and patriotic.

Use "Good Behavior" as a reference book for the teacher.

ORAL INSTRUCTION.

Employ object lessons, developing facts as to name, production and use of silk, leather, wool, fur, sugar, cotton, sponge, salt, milk, wheat, iron, cork, felt, tea, starch, vinegar, camphor, nutmeg, porcelain, copper, and such other familiar objects as time may permit.

Hold familiar talks about the cat, the dog, the cow, the horse, the camel, the elephant, the bear, the deer, the parts of the human body, and the senses.

Distinguish and name the secondary colors.

Distinguish and name lines as to kind and position.

Teach pupils to distinguish the time of day by the clock.

Use Calkins' Object Lessons and Mrs. Mayo's Object Lessons as reference books for the teacher

SEWING.

One hour or two half hours per week.

Cutting work bias and overhanding the same, running plain seams and over-casting.

Explain the difference between warp and woof.

SUGGESTIONS.

Cut work with greatest care as in previous year.

Cutting bias is cutting on the diagonal of a square directly across the warp and woof or filling.

Allow one-half inch on two sides of a square for the diagonal seam. Sew four squares with diagonal or bias seems to form one larger square.

In running, place the edges evenly together, and baste on the line of the desired seam.

Run the seam close to the casting thread, on the side next the sewer, commencing on the right hand side, keeping the needle parallel with the cloth, taking up three and omitting two threads.

In overcasting take stitches one-half the width of the seam, over-and-over loosely, to confine the torn edge of the cloth. In overcasting, when there is a difference in the width of the ends, always commence at the wider end.

BOOKS

TO BE PURCHASED BY THE TEACHER.

First Reader, California State Series — Common School English—One set Bradfield's Drawing Blanks—Good Behavior—Calkins' Object Lessons—Mrs. Mayo's Object Lessons.

TO BE PURCHASED BY THE PUPILS.

First Reader—Spencerian Copy Book No. 1—Bradfield's Drawing Blank No. 2.

THIRD GRADE—Time, One Year.

(Formerly Sixth Grade.)

READING.

Second Reader, State Series to Lesson XXXI.

Supplemental reading from readers in the school library.

Require pupils to memorize short selections of prose and poetry.

Insist upon pupils reading with proper force and in a natural tone of voice.

Require pupils to observe a proper position while reading.

Exercise pupils in voice culture for the purpose of developing pure tone and distinct utterance.

Endeavor to make pupils understand the meaning of what they read.

Direct particular attention to the correction of errors, and of slovenly habits of speech.

SPELLING.

Spell the words in the reader, and teach their use by employing them in sentences.

Form lists of words commonly used by children of this grade, and exercise in spelling such words, both orally and in writing.

Form lists of words usually misspelled by pupils in the class, and drill thoroughly on such lists both orally and in writing.

Teach all new words phonetically.

Use no spelling blanks.

PENMANSHIP.

Use the Spencerian System of penmanship, edition of 1888, No. 2.

Exercise on the independent formation of letters, and on the manner of combining them into words.

Drill thoroughly on the principles of the small and the capital letters.

Direct careful attention to position, and to the manner of holding the pen.

Continue to call attention by means of the blackboards, to errors in the formation of letters.

Require all written exercises to be prepared in a neat and legible hand.

LANGUAGE.

Have pupils give the substance of the reading lessons in their own language, both orally and in writing.

Copy reading lessons and other selections on paper and on slates.

Cause pupils to write short paragraphs from dictation.

Construct sentences from given words selected from the reading and the spelling lessons.

Construct original sentences.

Exercise in combining short independent statements into sentences.

Supply omitted words in partially constructed sentences.

Exercise in the oral and written description of pictures.

Reproduce, both orally and in writing, short sketches and stories from memory.

Cause pupils to make short compositions on familiar subjects, making the object lesson the basis of the work, as in the Second Grade.

Exercise in letter-writing, directing particular attention to the proper manner of beginning, closing and addressing a letter.

Teach the use of capital letters, the period, the interrogation point, the exclamation point and the quotation marks.

Have pupils talk about what they see and do, using complete sentences in expressing their thoughts.

Exercise pupils in the correction of such faulty expressions as are heard in the class-room.

Make the sentence the basis of all language work.

Use "Common School English" as a reference book.

ARITHMETIC.

Teach pupils to read and write numbers to 100,000.

Drill thoroughly in addition, subtraction, multiplication of whole numbers, multipliers and divisors not to exceed the number 12.

Direct particular attention to the addition of columns of numbers. No long division to be taught or practiced in this grade.

Develop the idea of common fractions.

Find the fractional part of whole numbers, such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{4}$, etc., not to exceed twelfths.

Teach the table of United States Money.

Teach simple Bills, using whole numbers.

Teach the Time Table.

Exercise in adding by 2's, 3's, 4's and 5's to 100.

Employ both concrete and abstract numbers.

Have frequent exercises in Mental Arithmetic.

GEOGRAPHY.

Teach pupils the shape of the earth, using the globe.

Teach the local geography of San Francisco and vicinity.

Teach pupils to tell what a county is, and in what direction the counties of Contra Costa, Alameda, Santa Clara, San Mateo and Marin are from San Francisco.

Name and locate the principal points of interest in and around San Francisco, including Mt. Diablo, Mt. Hamilton, Lick Observatory, and the State University, including the manner of going to these places.

Cause pupils to learn the names under which the most important natural bodies of land and water are classed.

Teach pupils about the various industries of San Francisco.

Teach what is meant by a map, and by direction on a map.

DRAWING.

Bradfield's Drawing Blank No. 3, in the hands of pupil.

MUSIC.

Continue to drill on scale intervals.

Practice by note on the charts.

Learn at least four new songs, by note and by words.

Use Loomis's Progressive Music Lessons, No. 1.

PHYSICAL EXERCISES.

Observe the directions given in the Second Grade.

MORALS AND MANNERS.

Observe the directions given in the Second Grade.

ORAL INSTRUCTION.

Object Lessons—Object lessons on familiar objects, developing the naming qualities as follows: rough, smooth, brittle, transparent, opaque, elastic, and porous.

Animals—Familiar talk with pupils on domestic animals, developing and teaching facts as to the name, distribution, habits, and use.

Color—Review primary and secondary colors. Distinguish and name the principal colors under the reds, the yellows, the blues, the oranges, the greens, the purples, the browns, the grays.

Form—Review lines. Distinguish, name, and define different kinds of plane angles.

Reference Book—Calkins' Primary Object Lessons.

SEWING.

Turning hems, hemming, to-wit : narrow-wide and bias.

SUGGESTIONS.

Turn a fold one-eighth of an inch, as in overhanding. Give the cloth a second fold the desired width of the hem. Narrow hems should be made as narrow as possible without fraying by use.

Measure wide hems with a card to keep them of uniform width.

Avoid stretching and puckering of hems. Always lay the hem with the thumb and finger. Avoid pinching the goods. In starting to hem make no knot ; point the needle toward the right side, bringing the end of the thread not drawn through, under the hem. Then use the needle as in running, taking up two threads of the cloth under the hem with two threads of the hem, making starting stitches and keeping the needle on the line of the hem.

All wide hems should be overhanded at both ends. In hemming cloth cut bias, whenever the cloth has to be pieced have the seam run the way of the warp.

BOOKS

TO BE PURCHASED BY THE TEACHER.

Second Reader, California State Series—Common School English—One set Bradfield's Drawing Blanks—Loomis's Progressive Music Lessons No. 1—Calkins' Primary Object Lessons—One pair scissors.

TO BE PURCHASED BY THE PUPILS.

Second Reader—Spencerian Copy Book No. 2--Bradfield's Drawing Blank No. 3—Loomis's Progressive Music Lessons No. 1--Sewing materials.

FOURTH GRADE—TIME, ONE YEAR.

(Formerly Fifth Grade.)

READING.

Second Reader, State Series, to Lesson LXXI.

Supplemental reading from the readers in the school library.

Require pupils to memorize short selections from prose and poetry, and to recite these selections both singly and in concert.

Insist upon pupils reading with proper force and in a natural tone.

Direct attention to articulation, pronunciation, accent, inflection, emphasis, movement and pitch.

Require pupils to observe a proper position while reading.

Exercise pupils in voice culture, for the purpose of developing pure tone and distinct utterance.

Teach pupils to understand the meaning of what they read.

Direct careful attention to the correction of errors, and the avoidance of all slovenly habits in reading.

SPELLING.

Exercise in spelling words in the reading lessons.

Teach all new words phonetically.

Require pupils to write from dictation, paying attention to proper paragraphing.

Exercise on the vowel sounds. Make lists of words commonly misspelled, and drill upon such words.

State Speller in hands of teacher, to Lesson 51.

Exercise in both oral and written spelling.

Teach spelling by the sentence method.

PENMANSHIP.

Use the Spencerian system, edition of 1888, No. 3.

Continue to drill upon the principles of both small and capital letters.

Exercise on the independent formation of letters, and their combination into words.

Require proper position of body, and proper manner of holding the pen.

Require all exercises to be executed in a neat and legible manner.

Make frequent use of the blackboard in teaching this branch.

LANGUAGE.

Exercise pupils in giving the substance of their reading lessons in their own language, both orally and in writing.

Require pupils to copy reading lessons and other selections, having careful reference to spelling, penmanship, capital letters and punctuation.

Dictate short selections, and require close attention to spelling, penmanship, capital letters, and the chief marks of punctuation.

Require oral and written descriptions of pictures.

Exercise on both oral and written reproduction, from memory of stories and sketches.

Exercise pupils in letter-writing, paying particular attention to the manner of beginning, closing and addressing.

Cause pupils to write short compositions on familiar subjects, and let all corrections be made in the class. Do not take any exercise in language to your homes for correction.

Supply omitted words in partially constructed sentences.

Construct sentences using words selected from the reading and the spelling lessons.

Construct sentences from short, independent statements.

Teach pupils to distinguish nouns, verbs, adjectives and adverbs in their reading lessons.

Teach pupils to distinguish the subject and the predicate.

Exercise on the use of capital letters, the quotation marks, the apostrophe, and upon punctuation marks heretofore learned.

Exercise pupils in correcting faulty expressions used in the school-room.

Reference Book—Common School English.

ARITHMETIC.

Exercise pupils in reading and writing numbers.

Continue to give abundant exercise in addition, subtraction, multiplication and division of whole numbers, with reference to accuracy.

Teach Long Division, the divisor not to exceed three places of units.

Teach addition and subtraction of fractions that have common denominators.

Teach the multiplication and division of fractions not exceeding twelfths.

Teach pupils to read and write decimals not exceeding thousandths.

Exercise on addition and subtraction of decimals.

Teach Long Measure and Avoirdupois Weight.

Exercise on simple operations of United States Money, including simple Bills, with the proper form of Bills and Receipts.

Have frequent exercises in Mental Arithmetic.

GEOGRAPHY.

Review the work of the Third Grade.

Locate and describe the hemispheres, the continents, and the oceans.

Teach the geography of California, requiring pupils to learn the chief facts in reference to the location, boundary, mountains, valleys, lakes, rivers, capes, islands, bays, chief cities, climate, and productions.

Under the geography of the United States, require pupils to learn the location; the boundary; the mountain systems; the five largest rivers, with description; the five largest lakes; and the name and location of San Francisco, Washington, New York, Philadelphia, Brooklyn, Boston, Chicago, St. Louis, Cincinnati, and New Orleans.

Require pupils to draw California in outline, and to locate the points of principal interest.

Modeling the map of California in clay optional.

Make a specialty of the geography of California. Make imaginary trips to the foregoing places, and trips of ocean travel from San Francisco.

Monteith's Elementary Geography in hands of teacher.

DRAWING.

Bradfield's Drawing Blank No. 4 in hands of pupils.

MUSIC.

Continuation of scale interval drill. Chart practice in keys of G and F. At least five new songs learned. Loomis's Progressive Music Lessons, No. 2.

PHYSICAL EXERCISES.

Observe the directions given in the Second Grade.

MORALS AND MANNERS.

Observe the directions given in the Second Grade.

ORAL INSTRUCTION.

Animals—Familiar talks with pupils about wild animals, developing facts as to name, distribution, habits, and uses.

Plants—Plants, their general structure, their principal parts, with the functions of each part. The flower, the fruit, the seed described. The most useful plants to man dwelt upon particularly.

Form—Review angles. Plain forms as in Calkins' Object Lessons, thoroughly taught.

Reference Book—Calkins' Primary Object Lessons.

SEWING.

Back stitching, running, felling and sewing in cords and binding.

SUGGESTIONS.

In back-stitching bring the needle through the goods three threads from the beginning of the seam, put the needle back three threads and under and through the cloth six threads forward, continuing the same movement. Seems for felling should be sewed with one back-stitch and two running stitches. In felling, commence at the wide end, having the edge of the cloth further from the sewer the widest. Turn over the wide edge of the hem as in narrow heming, making a flat seam.

Cords should first be basted in a bias fold before being sewed.

Always bind with a bias piece running on one side of the seam, and hemming on the other.

BOOKS

TO BE PURCHASED BY THE TEACHER.

Second Reader, California State Series — State Speller — Common School English - - One set Bradfield's Drawing Blanks—Loomis's Progressive Music Lessons No. 2--Calkins' Primary Object Lessons--One pair scissors—Monteith's Elementary Geography.

TO BE PURCHASED BY THE PUPILS.

Second Reader--Spencerian Copy Book No. 3--Bradfield's Drawing Blank No. 4 --Loomis's Progressive Music Lessons No. 2—Sewing material, and a blank book.

FIFTH GRADE—TIME, ONE YEAR.

(Formerly Fourth Grade.)

READING.

Second Reader, State Series, completed.

Supplemental reading from readers in the school library

Require pupils to memorize selections of prose and poetry, and to recite these both singly and in concert.

Pay particular attention to position, tone, articulation, emphasis, pronunciation, accent, inflection, emphasis, movement, and pitch.

See that pupils understand the meaning of the text in their reading lessons, and that their attention is called to the correction of errors.

SPELLING.

Spell, and teach the use of, words selected from the reading lessons.

Teach the diacritical marks, and their use.

Exercise in phonic spelling, and particularly on sounds of the vowels, and upon difficult combinations of consonants.

Have frequent dictation exercises, and by interchange of papers or slates accustom pupils to detect errors in spelling, punctuation, and the use of capital letters.

Teach pupils how to use the dictionary.

Dispense with the use of Spelling Blanks, using instead either paper or slates.

✓Take the State Speller to Lesson 101, in the hands of teacher, and review the more important portions of the speller prescribed for the Fourth Grade.

Exercise the pupils in both oral and written spelling, making the latter the more prominent.

Teach spelling by the sentence method.

PENMANSHIP.

Use the Spencerian System, edition of 1888, No. 4.

Drill on the formation of letters, both small and capital by principles.

Require all written class exercises in every study to be carefully and neatly executed. Accept no slovenly-executed work, but require pupils who present you such work to re-execute it.

Principals are required to see that teachers insist upon correct position of body, and correct manner of holding the pen.

LANGUAGE.

Exercise pupils in giving the substance of their reading lessons in their own language, both orally and in writing.

Copy selections on paper and on slates.

Dictate selections, and require pupils to write them on either slates or paper in a neat and legible manner.

Read to the class short stories and sketches, and require pupils to reproduce them, both orally and in writing.

Continue exercises in letter-writing, paying special attention to form and neatness, and to the composition of business letters.

Short compositions on familiar subjects, *to be written and corrected in the class.*

Supply omitted words in partially constructed sentences.

Exercise pupils in constructing sentences from lists of words prepared by the teacher.

Combine statements into sentences.

Teach pupils how to paragraph neatly.

Teach adjective and adverbial phrases, and their proper position in the sentence.

Exercise on the analysis and the synthesis of simple sentences having word and phrase modifiers.

Classify and define sentences according to use.

Exercise in changing sentences from one form to another according to use.

Teach the punctuation of simple sentences having word and phrase modifiers.

Exercise pupils in distinguishing the different parts of speech.

Teach the singular, the plural, and the possessive forms of nouns.

Teach the use of the pronoun.

Teach verbs as complete and incomplete, regular and irregular, transitive and intransitive.

Exercise pupils in correcting faulty expressions.

REFERENCE BOOK FOR LETTERS, ETC.—Common School English.

ARITHMETIC.

Review the work of previous grades, paying particular attention to the matter of exercising on fundamental rules, with reference to promptness and correctness.

Exercise thoroughly on the fundamental rules of Common and Decimal Fractions.

Develop the idea of percentage, and teach pupils how to make simple computations therein. [illegible]

Teach Liquid and Square Measure.

Drill thoroughly in making out, computing and receipting Bills.

Use the State Series Arithmetics on all topics embraced in the work of this and the preceding grades.

Drill well in Mental Arithmetic on all topics embraced in the written work of this and preceding grades.

Exercise abundantly with reference to correct and rapid mental operations in the combination of numbers.

Ward's Letter-Writing and Business Forms No. 1, in hands of pupils. One lesson per week.

GEOGRAPHY.

Review the work of the previous grades.

Teach the physical geography of North and South America, developing facts as to location, extent, surface, soil, productions and climate.

Teach the geography of the countries of North and South America, developing the most important facts as to location, extent, surface, cities, industries, commercial relations, education, religion, form of government and character of people.

Pay particular attention to the geography of the United States.

Teach the States and their capitals by groups.

Draw a map of the Western Hemisphere, showing the principal points in physical features, productions and political geography. This map should be a mere outline, unencumbered with details.

Monteith's Elementary Geography used as a guide to the teacher, and in the hands of the pupils.

PHYSIOLOGY.

SMITH'S PRIMER in hands of teacher : Familiar talks with pupils on the laws of health relating to the bones, the skin, and the digestive, the circulatory and the nervous systems. Give special instruction as to the nature of alcoholic drinks and narcotics and their effect upon the human system, as required in Section 1665 of the Political Code.

DRAWING.

Bradfield's Drawing Blank No. 5 in hands of pupils.

MUSIC.

PRACTICE—Singing by note in the keys of C, G, D, F and B flat.

THEORY—Names of the lines and spaces on Soprano and Bass Staffs, with explanation of all characters and signs used in the music practice. At least five new songs learned.

Loomis's Progressive Music Lessons, No. 2.

PHYSICAL EXERCISE.

Have physical exercises at least twice each day.

Observe the directions heretofore given relative to ventilation.

MORALS AND MANNERS.

Observe the directions contained in preceding grades

ORAL INSTRUCTION.

ANIMALS—Familiar talks with pupils on the most common families of birds, the principal food fishes, and the injurious and the useful insects.

FORM—Solid forms taught, as laid down in Calkins' Object Lessons.

SEWING.

Gathering and laying of gathers. Patching square, triangular and circular patches.

SUGGESTIONS.

In gathering, the seam should be one-fourth of an inch from the edge.

Divide the cloth into halves, and if the cloth is a long strip divide it into quarters. Always use a double thread with a small knot at the end, and having the thread longer than the piece to be sewed. To gather take up three stitches and skip five. Draw the thread through the material, pushing it tightly against the knot, and fasten the thread by winding it without knots around a pin placed in the material to be gathered. Lay each gather, using a coarse needle and holding the cloth between the thumb and first finger of the left hand.

Gathers may be hemmed, back-stitched or overhanded to the garment. If overhanded, the edge must be turned down before gathering, and the cloth gathered close to the edge of the fold.

Patches may be put in by overhanding, hemming or running.

BOOKS

TO BE PURCHASED BY THE TEACHER.

Second Reader, State Series — State Speller — Common School English—Advanced Arithmetic, State Series—Ward's Letter Writing and Business Forms, No. 1—Monteith's Elementary Geography—Smith's Primer of Physiology—One set Bradfield's Drawing Blanks—Loomis's Progressive Music Lessons, No. 2—Calkins' Object Lessons—One pair scissors.

TO BE PURCHASED BY THE PUPILS.

Second Reader, State Series—Spencerian Copy Book No. 4—Advanced Arithmetic, State Series—Monteith's Elementary Geography—Bradfield's Drawing Blank, No. 5—Loomis's Progressive Music Lessons, No. 2—Ward's Letter-Writing and Business Forms, No. 1—~~Sewing materials and blank~~ book.

2 blank. [illegible]

SIXTH GRADE.—Time, One Year.

(Formerly Third Grade.)

READING.

Third Reader, State Series, to Lesson LI.

Supplemental reading from readers in the school library, from "The Geographical Reader and Primer" and from selections from standard authors.

Require pupils to memorize selections and recite them singly and in concert.

Notice carefully and adopt the suggestions contained in the reader relative to articulation, pronunciation, accent, etc.

Observe closely and endeavor to impress upon pupils the necessity for attention to all those attributes which constitute a good reader. Be, yourselves, a model for your class to imitate.

SPELLING.

Use the State Speller, in hands of teacher, taking lessons 101 to 201.

Make selections of words from the reading lessons in the reader; endeavor to familiarize pupils with them, in order to make such words available in the expression of thought.

Exercise in phonic spelling with reference to cultivating distinct utterance.

Form lists of words from the speller and the reader that are difficult to pronounce; also lists of words that are most frequently misspelled. Drill thoroughly on such lists. Familiarity with them makes difficult words easy.

Dictate passages from the reader, and other selections, with reference to neatness of paragraphing, as well as correctness of spelling.

Dispense with spelling blanks, and use instead slates and paper.

Continue to exercise on the diacritical marks.

Exercise pupils in the use of the dictionary.

Teach spelling by the sentence method.

PENMANSHIP.

Use the Spencerian System, edition of 1888, No. 5.

Continue to drill upon the principles of small and capital letters.

Insist upon all written exercises, in every study, to be carefully and neatly executed. Accept no slovenly executed work, but require pupils who present such work to re-write it.

Principals must insist upon teachers requiring attention to position and to the proper manner of holding the pen.

LANGUAGE.

Require pupils to give the substance of reading lessons both orally and in writing.

Read to your class or require them to read, stories and selections, and cause them to reproduce these orally and in writing, at some time subsequent to the day in which the reading is done.

Supply omitted words in partially constructed sentences. In order to do this, have your lessons for the class prepared beforehand.

Make lists of words and require pupils to arrange them into neatly constructed sentences.

Combine original statements into sentences in such manner as to form continued narrative.

Continue to drill on adjective and adverbial phrases.

Continue to exercise on the analysis and the synthesis of simple sentences.

Teach adjective and adverbial clauses, and their proper position in a sentence.

Continue to exercise pupils in distinguishing the complete subject and the complete predicate of sentences.

Teach pupils the rules for the proper position of modifiers, and exercise them in detecting violations of these rules.

Teach the agreement of the verb with its subject, and of the pronoun with its antecedent.

Continue to exercise in letter-writing, especially in the writing of business letters, paying special attention to form.

Cause pupils to write compositions on familiar subjects, encouraging them to pay attention to neatness of expression and proper paragraphing.

Continue to drill upon the use of capital letters, and the punctuation of simple sentences.

Teach pupils to distinguish the parts of speech.

Teach pupils to distinguish the active and passive voice of verbs, and to change from the active form to the passive, and the opposite.

Exercise pupils in detecting and in correcting faulty forms of expression, especially such as are most common.

Reference Book for Letters, Etc.—Common School English.

ARITHMETIC.

Make a thorough topical review of the work of previous grades, paying particular attention to the addition of columns, and the division of decimals; also to the solution of practical examples in addition, subtraction, multiplication and division of common fractions.

Compound numbers continued through cubic measure, liquid measure, dry measure, and circular measure.

Teach pupils how to measure and estimate, and find the cost of wood, hay, grain, land, lumber, brick and carpets.

Teach pupils to find the simple interest on sums of money, using the aliquot part method.

Continue thorough drill on making out original bills. Teach pupils how bills should be receipted.

Use the arithmetic of the State Series in connection with the topics above named.

Drill well in mental arithmetic on all the topics embraced in the written work of this and the preceding grades.

Exercise with reference to correct and rapid mental operations in the combination of numbers.

Ward's Letter Writing and Business Forms No. 2.

GEOGRAPHY.

Review the work of the Fifth Grade, by comparing the leading features of Europe, Asia, and Africa, with those of North and South America.

Teach the geography of Europe, Asia, Africa, and Oceanica, developing facts as to location, extent, surface, soil, productions, and climate.

Teach the important countries of Europe and Asia, developing facts as to location, extent, surface, principal cities, important industries, leading commercial relations, education, religion, form of government, and character of the people.

Under countries in Asia, take China, Japan, Turkey, and British India.

Teach what is meant by latitude, by longitude and by zones.

Draw a map of the Eastern Hemisphere, showing the principal points in physical features, productions, and political geography. This map should be a mere outline unencumbered with details.

Monteith's Elementary Geography used as a guide for the teacher and in the hands of the pupils.

PHYSIOLOGY.

Continue this branch in the Fifth Grade, using Smith's Primer as a reference book for the teacher.

DRAWING.

Bradfield's Drawing Blank No. 6 in hands of pupils.

MUSIC.

Singing by note in the keys of C, G, D, F, B flat and E flat.

Review of Fourth Grade, with full explanation of all the musical fractions in general use.

Loomis' Progressive Music Lessons, No. 3.

PHYSICAL EXERCISE.

Observe the directions given in the preceding Grades.

MORALS AND MANNERS.

Observe the directions given in the preceding Grades.

ORAL INSTRUCTION.

Miscellaneous—Familiar talks with pupils on the growth of the material and on the manufacture of clothing, the procuring and preparation of the more important food articles, the various kinds of fuel and the different varieties of building material.

SEWING.

Making button-holes, eyelets, thread-eyes and sewing on all kinds of buttons.

SUGGESTIONS.

Cut the button-hole the width of the button. Button-holes should be barred and overcast. In cutting button-holes, cut away from the folded edge. Commence to work the button-hole at the end farthest from the folded edge, placing the needle through the cloth, looping the thread over the needle and drawing the needle so as to bring the twist on the edge of the button-hole. In sewing on buttons put the knot on the upper side. Eyelets may be worked as button-holes or overhanded.

BOOKS.

TO BE PURCHASED BY THE TEACHER.

Third Reader, State Series—State Speller — Common School English—Smith's Primer of Physiology—Advanced Arithmetic, State Series—Ward's Letter Writing and Business Forms, No. 2—Monteith's Elementary Geography—One set Bradfield's Drawing Blanks—Loomis's Progressive Music Lessons, No. 3—One pair scissors.

TO BE PURCHASED BY THE PUPILS.

Third Reader—State Series—Spencerian Copy Book No. 5 — Advanced Arithmetic, State Series — Ward's Letter-Writing and Business Forms, No. 2—Bradfield's Drawing Blank, No. 6—Monteith's Elementary Geography—Loomis's

4 Progressive Music Lessons, No. 3 — Sewing materials an blank book.

SEVENTH GRADE—Time, One Year.

(Formerly Second Grade.)

READING.

Third Reader, State Series, to Lesson CXXV. Suppl mental reading from readers in the school library, fro "The Geographical Reader and Primer" and from selectio from American and other standard authors.

Cultivate memory and expression by having pupils men orize selections and recite them, both singly and in concer

Exercise carefully with reference to correctness in artic lation, pronunciation, tone, accent, inflection, emphasi movement and pitch.

Endeavor to be, yourself, a model of elegance and correc ness in all the attributes that constitute a good reader, an to encourage pupils to attain proficiency in this importa branch.

SPELLING.

Use the State Speller, in hands of teacher, taking lesson 201 to 301.

Require pupils to spell and to learn the use of all wor employed in the reading lessons.

Teach the diacritical marks with reference to enablin pupils to use the dictionary correctly and to advantage.

Exercise in phonic spelling for the purpose of cultivatin correct pronunciation and articulation.

Form lists of such words as are frequently misspelled or ispronounced and exercise pupils thereon.

Have frequent dictation exercises for the purpose of habit-iting pupils to correct spelling and paragraphing.

Dispense with spelling blanks, using instead slates or per.

Exercise pupils in the use of the dictionary with reference correct spelling, pronunciation and meaning of words.

Teach spelling by the sentence method.

PENMANSHIP.

Use the Spencerian System, edition of 1888, No. 6.

Continue to drill upon the principles of both small and pital letters, and encourage pupils to acquire correct hab- as to position of body, manner of holding the pen and strained manner of writing.

Accept no written exercises in any study, at any time, t are not neatly and carefully executed.

Have pupils copy extracts from their readers in order to rcise them in paragraphing and in neatness of execution; l let these be cursorily examined by the teacher, and re-pied if not carefully executed.

Principals should frequently supervise this work, in order see whether pupils are exercised in accordance with in-ictions.

LANGUAGE.

Require pupils to exercise in giving the substance of mat- read by them or by others, both orally and in writing.

Exercise on the construction of original sentences con-ining word, phrase and, clause modifiers.

xercise in changing one kind of modifier into another, , word modifiers into phrase modifiers, etc.

Exercise in changing one kind of sentence to another, i. e., simple to complex, declarative to imperative, etc.

Exercise in correcting sentences containing modifiers that are misplaced, subjects and predicates and pronouns and antecedents that do not agree, and predicate nominatives that do not agree with the subject.

Exercise carefully on letters, in reference to form, manner of folding, addressing, etc. Business letters should be made of special importance.

Independent compositions on familiar subjects.

Teach the analysis of simple, complex and compound sentences, and the use of phrases and clauses in a sentence.

Exercise in combining separate statements into sentences.

Teach the punctuation of complex and compound sentences.

Continue to drill upon the use of capital letters.

Review and exercise upon the grammar work of previous grades, and teach the comparison of adjectives and adverbs.

Exercise in the correction of faulty expressions, especially such as children are most likely to use.

Use the State Grammar as a text-book, showing pupils how to prepare their lessons, and requiring them to do so.

ARITHMETIC.

Make, from time to time, a thorough topical review of all the work of previous grades, paying particular attention to the addition of columns.

Exercise on the addition, substraction, multiplication and division of compound numbers.

Exercise on the fundamental operation of Common Fractions, including the G. C. D. and the L. C. M. of numbers.

Teach Longitude and Time, Board Measure, Masonry, Percentage, Commission and Brokerage and Simple and Compound Interest.

Use Ward's Letter-Writing and Business Forms No. 3.

Use the Arithmetic of the State Series, in connection with all reviews and the topics above named.

Combine mental Arithmetic with written on all the topics in both review and advance work.

Require from pupils a full explanation of all work, until until they can give it readily and intelligently.

HISTORY.

Take the following topics, using the State History of the United States as a guide to the teacher, and a text-book for the pupils :

The Discoveries.

The Settlements.

The Colonial Wars.

The Revolutionary War.

In connection with history take the most important parts of the Constitution of the United States.

Carefully observe the directions contained in Section 186 f the Rules and Regulations.

GEOGRAPHY.

Teach the physical and political Geography of North and nd South America, requiring pupils to learn important acts connected with the location, the extent, the surface, the oil, the climate, the productions, the cities, the industries, he commercial relations, the education, the religion, the orm of government, and the character of the people.

Teach pupils about winds, showing their relations to ommerce and climate.

Teach latitude and longitude and the zones.

Pay particular attention to the Geography of the United States, and require pupils to draw a map thereof, showing the physical features, the distribution of productions, and the chief points in the political Geography thereof.

Use Monteith's Comprehensive Geography as a text-book.

PHYSIOLOGY.

Teach the more important principles of hygiene, using Steele's Hygiene Abridged, as text-book.

DRAWING.

Bradfield's Drawing Blank No. 7, in hands of pupils.

MUSIC.

Singing by note in all the keys. Sight reading of elementory music. Reviews and transpositions of the Major Scales.

Loomis's Progressive Music Lessons, No. 3.

PHYSICAL EXERCISE.

Observe the directions heretofore given.

MORALS AND MANNERS.

Observe the directions heretofore given.

SEWING.

Hemstitching, drawn work, in simple form, darning of all kinds.

BOOKS

TO BE PURCHASED BY THE TEACHER.

Third Reader, State Series — State Speller — State Grammar — Advanced Arithmetic, State Series — Ward's Letter-Writing and Business Forms, No. 3 — History of the United States, State Series—Monteith's Comprehensive Geography—Steele's Hygiene, Abridged—One set Bradfield's Drawing Blanks—Loomis's Progressive Music Lessons, No. 3—One pair scissors.

TO BE PURCHASED BY THE PUPILS.

Third Reader, State Series — Spencerian Copy Book, No. 6 — Grammar, State Series — Advanced Arithmetic, State Series—Ward's Letter-Writing and Business Forms, No. 3—History of the United States, State Series—Monteith's Comprehensive Geography—Steele's Hygiene Abridged—Loomis's Progressive Music Lessons, No. 3—Sewing materials and blank book.

EIGHTH GRADE—Time, One Year.

(Formerly First Grade.)

READING.

Continue instruction and exercise in this branch as directed in the Seventh Grade, and complete the Third Reader of the State Series.

SPELLING.

Continue this branch as directed in the Seventh Grade, and complete the State Speller.

PENMANSHIP.

Follow the directions given in the Seventh Grade.
Use the Spencerian System, edition of 1888, No. 7.

LANGUAGE.

Review the work of preceding grades.

Teach the various changes and combinations of verbs to denote manner of expression and time.

Continue thorough drill in sentence-making with particular reference to the correct use of phrases and clauses.

Cultivate clearness, strength and beauty of expression, teaching pupils wherein these elements consist, and to detect the presence or absence of any of them.

Drill upon the principles of punctuation, especially the use of the comma, semi-colon and colon.

Have frequent exercises in composing essays upon subjects selected by the Principal or by the class teacher.

Exercise frequently in different kinds of letter-writing, paying attention to manner of expression, arrangement of matter, mode of addressing, and to all the attributes which compose a good letter.

Complete the State Grammar, and review and practice upon the most important principles, especially those relating to the syntax of sentences.

Drill thoroughly upon the correction of expressions faulty in any respect, requiring pupils to assign reasons for any corrections made.

Show pupils how to study and require them to study. Assign lessons and require the lessons assigned to be learned —not memorized, but studied until the principles are so thoroughly learned that they can without difficulty be adopted in practice.

Definitions and principles should be so well learned that pupils may be able to express them without being confined to other than correct expression.

Longfellow's Evangeline—to be read in the class.

The thought of the text should be given by the pupils in their own language. Transposition and paraphrasing should also be taught and required of the pupils.

ARITHMETIC.

Make a topical review of the work of preceding grades, with particular attention to those portions which are of practical importance.

Teach Profit and Loss, Insurance, Taxes, Problems in Interest, Compound Interest and Annual Interest, Partnership, Ratio, Proportion, Involution, Square Root, Cube Root, and the principles of Mensuration.

In all exercises, combine mental with the written work.

Use the arithmetic of the State Series in connection with reviews and the topics above named.

Teach pupils the principles of the equation.

Assign lessons in this branch after proper explanation of principles, and require such lessons to be studied; then thoroughly examine the pupils of the class upon principles.

Require thorough explanation of work done. Require accuracy.

Use Ward's Letter-Writing and Business Forms, No. 4.

ALGEBRA.

Clarke's Algebra in the hands of the teacher to be used as a book of reference. To be taught orally, one lesson per week.

HISTORY.

Teach this branch by topics, using the State History of the United States as a guide for the teacher, and a text book for the pupils.

Review the topics of the Seventh Grade, and continue the work to the present time omitting unimportant dates.

GEOGRAPHY.

Review the work of the Seventh Grade, by comparing the important features of Europe, Asia and Africa, with the same points on North and South America.

The physical and the political geography of Europe, Asia and Africa, and Oceanica taught.

Under Physical Geography, have the pupils investigate and learn the important facts relating to the surface, the fertility of the soil, the distribution of the productions and the climate.

Under Political Geography, have the pupils investigate and learn about the countries of Europe, Asia, Africa, and Oceanica, developing facts as to location, extent, surface, cities, industries, commercial relations, education, religion, form of government, and character of the people.

Tides and Ocean Currents, and their relations to commerce, taught.

Pay particular attention to the geography of Europe. Draw a map of Europe showing the physical features, the distribution of productions, and the more important points of political geography.

Monteith's Comprehensive Geography used as a guide for the teacher, and in the hands of the pupils.

PHYSIOLOGY.

Review the work of all previous grades. Steele's Hygiene Abridged, as text-book.

DRAWING.

Bradfield's Drawing Blank, No. 8, in hands of pupils.

MUSIC.

Review of note singing in all the keys. Sight reading of simple music.

Reviews. Writing of Minor and Chromatic Scales. A least five new songs learned.

Text-book: Loomis's Music Lessons, No. 4.

PHYSICAL EXERCISE.

Follow directions given for preceding Grades.

MORALS AND MANNERS.

Follow directions given for percedingGrades.

ORAL INSTRUCTION.

Physics—Teach pupils the more important facts relating to Matter and Machines.

SEWING.

Flannel stitches, scallop, herring-bone, feather, satin, outline or stem, and chain stitching.

BOOKS

TO BE PURCHASED BY THE TEACHER.

Third Reader—Evangeline—State Speller—State Grammar—Advanced Arithmetic, State Series—Clarke's Algebra—State History—Monteith's Comprehensive Geography—Steele's Hygiene Abridged—One set Bradfield's Drawing blanks—Loomis's Music Lessons, No. 4—Ward's Letter-Writing and Business Forms, No. 4—One pair scissors.

TO BE PURCHASED BY THE PUPILS.

Third Reader, State Series—Evangeline—Spencerian Copy Book, No. 7—Grammar, State Series—Advanced Arithmetic, State Series—Ward's Letter-Writing and Business Forms, No. 4—History of the United States, State Series—Monteith's Comprehensive Geography—Steele's Hygiene Abridged—Bradfield's Drawing Blank, No. 8—Loomis's Progressive Music Lessons, No. 4—Sewing materials and blank book.

HIGH SCHOOLS.

CLASSICAL COURSE.*

JUNIOR YEAR.

Latin—Beginner's Book. Cæsar's Gallic War, Books III and IV. Grammar. Latin at sight. Latin Composition.

English—Selections from Plutarch's Lives. Longfellow's Evangeline. Whittier's Snow Bound. Scott's Lady of the Lake. Grammar. Reading.

Mathematics—Algebra to Quadratics. Review of Arithmetic and Business Arithmetic. Double-Entry Book-keeping (optional).

History—English History.

Drawing—Freehand.

Music—Reader.

General exercises throughout the year.

MIDDLE YEAR.

Latin—Cæsar's Gallic War, Books I and II. Cicero, six orations. Sight Reading. Latin Composition.

Greek—Introductory Book and Grammar. Xenophon's Anabasis, Book I. Greek Composition.

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* This course is not, at present, in operation in the Girls' High School.

English—Irving's Alhambra. Scott's Lay of the Las Minstrel. Thackeray's The Newcomes. Rhetoric.

Mathematics—Plane Geometry.

History—Roman History.

Drawing—Geometrical and Ornamental.

Music—Reader.

General exercises throughout the year.

SENIOR YEAR.

Latin—Virgil's Æneid, six books. Latin Prosody. Sight Reading. Latin Composition.

Greek—Xenophon's Anabasis, Books II, III and IV. Homer's Iliad, Books I and II. Greek Prosody. Sight Reading. Greek Composition.

English—Shakespeare's Julius Cæsar and Merchant of Venice. Lowell's Vision of Sir Launfal. Addison's Sir Roger de Coverly. Review of Grammar.

Mathematics—Solid and Spherical Geometry, five mos. Algebra through Quadratics, five mos.

History—Grecian History, seven mos. Civil government, three mos.

Drawing—Geometrical, Ornamental and Perspective.

Music—Reader.

General exercises throughout the year.

LITERARY COURSE.

JUNIOR YEAR.

Latin—Beginner's Book. Cæsar's Gallic War, Books III and IV. Grammar. Sight Reading. Latin Composition.

ENGLISH—Selections from Plutarch's Lives. Longfellow's Evangeline. Whittier's Snow Bound. Scott's Lady of the Lake. Grammar. Reading.

MATHEMATICS—Algebra to Quadratics. Review of Arithmetic and Business Arithmetic. Double-Entry Book-Keeping (optional).

HISTORY—English History.

DRAWING—Freehand.

MUSIC—Reader.

General exercises throughout the year.

MIDDLE YEAR.

LATIN—Cæsar's Gallic War, Books I and II. Cicero, six orations. Sight Reading. Latin Composition.

SCIENCE—Physics.

ENGLISH—Irving's Alhambra. Scott's Lay of the Last Minstrel. Thackeray's The Newcomes. Lowell's Vision of Sir Launfal. Addison's Sir Roger de Coverly. Shakespeare's Merchant of Venice. Rhetoric.

MATHEMATICS—Plane Geometry.

HISTORY—Roman History.

DRAWING—Geometrical and Ornamental.

MUSIC—Reader.

General exercises throughout the year.

SENIOR YEAR.

LATIN—Virgil's Æneid, six books. Latin Prosody. Sight Reading. Latin Composition.

SCIENCE—Chemistry, 7 mos. Astronomy, or Botany and Physiology for the remaining 3 mos.

ENGLISH—Shakespeare's Julius Cæsar. Hales' Longer English Poems. Burke's Select Works. Review of Grammar

MATHEMATICS—Solid and Spherical Geometry, 5 months Algebra through Quadratics, 5 mos.

HISTORY—Grecian History, 7 mos. Civil government, 3 mos.

DRAWING—Geometrical, Ornamental, and Perspective.

MUSIC—Reader.

General exercises throughout the year.

SCIENTIFIC COURSE.

JUNIOR YEAR.

ENGLISH—Selections from Plutarch's Lives. Longfellow's Evangeline. Whittier's Snow Bound. Scott's Lady of the Lake. Grammar. Reading.

MATHEMATICS—Algebra to Quadratics. Review of Arithmetic and Business Arithmetic. Double-Entry Book-keeping.

SCIENCE—Zoology. Botany. Physiology.

HISTORY—English History.

DRAWING—Freehand.

MUSIC—Reader.

General exercises throughout the year.

MIDDLE YEAR.

ENGLISH—Irving's Alhambra. Scott's Lay of the Last Minstrel. Thackeray's The Newcomes. Lowell's Vision of

Sir Launfal. Addison's Sir Roger de Coverly. Shakespeare's Merchant of Venice. Rhetoric.

MATHEMATICS—Plane Geometry. Algebra through Logarithms.

SCIENCE—Physics.

HISTORY—European, Mediæval, and Modern.

DRAWING—Geometrical and Ornamental.

MUSIC—Reader.

General exercises throughout the year.

SENIOR YEAR.

ENGLISH—Shakespeare's Julius Cæsar. Hales' Longer English Poems. Burke's Select Works. Review of Grammar

MATHEMATICS—Solid and Spherical Geometry. Plane and Spherical Trigonometry,* 5 mos. Analytical Geometry,* and Surveying,* 5 mos.

SCIENCE—Chemistry, 7 mos. Astronomy or Chemistry, the remaining 3 mos.

HISTORY—European, Mediæval, and Modern, 5 mos. Civil Government, 5 mos.

DRAWING—Geometrical, Ornamental, and Perspective.

MUSIC—Reader.

General exercises throughout the year.

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* Optional in Girls' High School.

ENGLISH.

JUNIOR YEAR.

LITERATURE—Plutarch's Lives. Longfellow's Evangeline. Whittier's Snow Bound. Scott's Lady of the Lake. Fletcher's Select Readings and Recitations.

GRAMMAR—Development of the simple, the complex and the compound sentences by synthesis and analysis. Classification of the parts of speech. Special study of infinitives and participles.

EXPRESSION, Oral—Substance of text in pupil's own language. Transposition of sentences. Paraphrasing. Pupils to tell anecdotes and stories from supplementary reading. Description of natural objects, description of places and persons.

Written—Paraphrasing. Outlining and abstracting. Narrative and descriptive subjects from the literature.

Invention—Exercises in amplification. Given characters and situations, pupils to supply narrative. Given outline of scene, pupils to complete description.

Reasoning—Subjects that call for why a certain thing is, or is done.

WORD WORK—Teach use of dictionary, sounds of the letters and diacritical marking. Meaning in text of new words and those essential to the sense. Words that recur with different shades of meanings in the text of an author should receive attention. Development of the relations expressed by prepositions, co-ordinate and subordinate conjunctions. The power of the verbal forms, and the relations and scope of adjectives.

GENERAL DIRECTIONS—Develop the idea of unity, clearness and strength in construction of sentences, and lead the pupil to strive for the simplest and most effective expression of his thought in writing a sentence. Exposition of similies and metaphors. Distinction between poetry and prose in object, form, and diction. Spelling from classified lists of words and vocabulary of the literature. Careful attention to punctuation in written work. The whole question of orderly and uniform arrangement of written work should be settled during the Junior year.

MIDDLE YEAR.

LITERATURE—Irving's Alhambra. The Lay of the Last Minstrel. Thackeray's The Newcomes. Lowell's Vision of Sir Launfal. Sir Roger de Coverly. Merchant of Venice.

RHETORIC—Review of sentential analysis. Special constructions. The sentence rhetorically considered—arrangement, unity, variety. Study of paragraphing. Sequence of sentences. Figures of speech and qualities of style as given in Kellogg's Rhetoric.

EXPRESSION.

ORAL—Abstracts of text. Five-minute talks on general subjects. Discussion in class of questions suggested by the literature.

WRITTEN—Continue narrative and descriptive composition; introduce character sketches. Themes in exposition. Letter-writing, business and social forms.

Amplification in description of persons, places and scenes found in the literature, taking care that the part supplied by the imagination is in harmony with what is given by the author.

INVENTION—Action or event suggested, pupils to supply motive and actors. Plot given, pupils supply characters and incidents. Outline of plots by pupils, Imaginary Conversations. Letters to characters and personages.

Reasoning—Questions calling for the presentation of pro and contra. Argumentative essays upon subjects suggested by literature and current events.

Word-Work—Analysis and derivation of words. Growth of generic words. How words grow into different meanings in present use. Synonym work. In connection with figures of speech, give some idea of the principles that govern the transposition of meaning in words.

In Sir Roger de Coverly and Merchant of Venice call attention to those words that differ from their present meaning.

Call attention to English, Latin, Greek, and Norman-French elements in the diction of authors.

SENIOR YEAR.

Literature—Julius Cæsar. Hales' Longer English Poems. Burke's Select Works, Vol. I.

Rhetoric—Varieties of discourse. Versification.

Grammar—Comprehensive review of structure and forms. Shakespearean syntax.

Expression—Oral. Discussion of subjects in literature. Five-minute talks upon subjects suggested by literature and every-day affairs.

Written—Structural analysis of poems. Themes in different varieties of discourse. Special attention to management of themes in argumentation and persuasion.

Word-Work—Careful study of diction of an author. The derivation, changes in meaning and present use of important words.

LATIN.

JUNIOR YEAR.

Collar and Daniel's Beginner's Book completed in 5 months. General plan of the book followed. Special effort made to teach the pupil to recognize at a glance the relations expressed by the various endings, without the thought-process of translation.

Cæsar's Gallic War, Books III and IV read critically the last 5 months. Book I, at sight. In connection with the assigned lesson, daily work is given on the blackboard in review of forms, modifications, in fact, all the elementary work. This with a short weekly written exercise on the class work holds every pupil accountable for a certain amount of work. Position of words in relation to emphasis in the Latin sentence taught. Attention called to the difference in use of common synonymous words. Pupils required to keep a written translation in good English of Book III. Cæsar's campaigns closely followed on the map.

In Sight Reading pupils trained to distinguish quickly between the independent and dependent clauses often by the mood of the verb.

Harkness' Latin Grammar is used as a basis for reference; but pupils are early trained to appreciate at once the power of connecting words and the relations of case endings, and are expected to show grammatical construction in their translation so far as it is compatible with good English.

Collar's Latin Prose is used in connection with Cæsar. The treatise itself suggests the plan followed.

MIDDLE YEAR.

Cæsar's Gallic War, Books I and II; two books at sight. (Portions of Nepos may be substituted for the Cæsar in sight reading.) Continuation of other methods used in the Junior Year. Continuation of Latin Prose on basis of text read.

Cicero—Six orations; one oration at sight, or sight reading from Sallust's Cataline. Usual critical work on text. Careful study of verb forms. Contemporaneous history. Study of author's style of oratory and power in arrangement of words and sentences. Passages committed to memory and delivered in the original to show power of author. Accustom pupils to get the thought of the Latin sentence from a running survey. Have Latin discourse read to the class to cultivate this habit.

Latin Prose on basis of text. Rapid written and oral translation from English to Latin of dictated passages.

SENIOR YEAR.

Virgil's Æneid—Six Books. Translation at sight of two books of the Æneid, or all the Eclogues; or 1,000 lines of Ovid. Rules of scansion and quantity. Irregular forms. Grammatical rules thoroughly understood. Knowledge of references in text. Power of accurate and elegant translation cultivated. Life of Virgil and contemporaneous history. Source of material with a good idea of mythology. Synonyms. Figures of speech. Etymology. Committing to memory passages of beauty and power, and cultivation of ability to recognize such passages.

Continuation of Latin Prose as in Middle Year.

GREEK.

White's Greek Lessons furnishes the material for elementary work in the study of the Greek language. The first term of middle year is devoted to a careful study of this text-book, and to such supplementary practice as will insure a thorough knowledge of forms. The acquirement of a vocabulary and a study of the order of words by careful reference to the Greek itself, sufficient to enable the pupil to translate brief sentences from the Greek to English and *vice versa*, constitute a feature of this term's work. Simplified selections adapted from Xenophon are given near the close of the term, that the transition from the Lessons to the text of the Anabasis may be less difficult. During the second term of Middle Year the first book of Anabasis is finished and Jones' Greek Prose Composition begun. Particular attention is now given to the syntax and structure of the sentence and to the development of accuracy in translating the thought of the author into smooth idiomatic English.

Xenophon is the author to be studied during the first term of Senior Year. The class will read the second, third and fourth books of the Anabasis and continue Jones' Composition. The conditional sentence and indirect discourse are now more critically studied. A constant study of the principal parts of verbs, peculiarities of declension, and the syntax of the grammar is required. The last term of Senior Year is devoted to the study of the Iliad of Homer. The student is required to note carefully the forms peculiar to the Epic dialect and to give the corresponding Attic forms. Scansion is studied and due attention given to all historical and mythological allusions and figures of speech. Exercises in sight reading are given throughout the course for the purpose of developing ease and fluencey in translating. It is hoped that the study of the classics will not be viewed by the pupil as mere mechanical labor, but that such an interest will be awakened that "the brain and heart will work with eye and ear, intelligence with memory, to develop that sense of power which is one of the chief sources of the power itself."

MATHEMATICS.

JUNIOR YEAR.

ALGEBRA—The usual transformation of algebraic expressions to equivalent forms, including those effected by means of fractional and negative exponents; rationalizing, applied to monomials and polynomials ; binomial theorem and its corollaries; square and cube root of polynomials. The last two months of the year are devoted to the study of the equations of the first degree, including radical equations, simultaneous equations, and the various methods of elimination.

BUSINESS ARITHMETIC—Practice in addition, and short methods of multiplication; problems in percentage, stress being laid on the importance of neatness, accuracy and quickness. Two hours per week is required of all the Juniors throughout the year in this work.

MIDDLE YEAR.

PLANE GEOMETRY presents three departments of work to be carried on simultaneously by the pupil. The first department is designated Generalizing; the second, Analysis of Original Propositions; the third, Note-Book Work. The application of positive and negative signs is made at the very outset, and by means thereof a general proposition is obtained that will include two or more special propositions. To give the greatest possible scope to this exercise, certain definitions of straight lines, parallel lines, tangents, etc., are introduced as conventions. Demonstrations and solutions are to be so general as to apply literatum et verbatim to all possible positions of points and lines within the limits of the proposition. In department two, the pupil is taught how to attack in a systematic way the solution of an original problem, or the demonstration of an original theorem.

The method in general is the following : First, he assumes that he has obtained the required point or line ; second, he asks himself what inference or inferences are to be drawn from this assumption; third, what propositions are suggested by these inferences ; fourth, what is the combination of given material to which the suggested propositions will apply. From this combination the unknown point or line may be obtained.

This analytical method of solving each problem, followed by the synthetical in the actual construction of the figure, and the ever-present principle of duality that figures satisfying given conditions (like values of x and y in an equation) appear and disappear in pairs are the essential features of this division of the work. The Note-Book division is intended to develop habits of carefulness and accuracy in the mechanical execution of the work, the judgment in the logical arrangement of the various steps of the proof, and the good taste of the pupil in making his work attractive. Only such problems are entered in the note-book as possess special value and interest; as, for example, the geometric problem of the lights, the problems of Apollonius, of the mean centers, etc.

Algebra required of pupils in Science course. Same as work required of Classical Seniors in last half of senior year. In addition the progressions, series, and the subject of determinants, so far as it applies to the solution of simultaneous equations of the second degree between two variables. Logarithms. As much discussion of the theory of the equation as time will permit.

Algebra alternates with drawing throughout the year.

SENIOR YEAR—(First Half.)

Solid and Spherical Geometry follows a month of review of Plane Geometry. The principles of Mensuration relating to Solids are demonstrated and applied in practical problems. Venable's Geometry will indicate the amount of ground covered. Pupils passing successfully in this subject are admitted to advanced standing in Mathematics in the State University, should they enter there. All Seniors pursue this study.

TRIGONOMETRY—Plane and Spherical. Deduction of useful formulas. The use and construction of Logarithmic tables. Solution of plane and spherical triangles. Problems in Navigation. Napier's Rules and Analogies. Gauss' Equations. Only students of the course in Science are required to take Trigonometry.

SENIOR YEAR—(SECOND HALF.)

SURVEYING—Practical work in the field with transit, chain compass, level and leveling rods. Plans and specifications for sewer work, ditches, leveling for section, surveys of unimproved lands in the neighborhood of the school. As much time is spent in the field as the nature of school duties will permit. The practical work in this subject will be of special value to pupils who intend to become builders, mechanics, contractors or engineers.

ANALYTIC GEOMETRY—Required of students in Science Course: Plotting of curves. Different equations of the straight line. Homogeneous equation of the 20th degree, condition that a Quadratic represent two straight lines. General Equation of the circle, tangent and normal; condition that a straight line touch a circle. Relations of Pole and Polars of a circle. Transformation of co-ordinates from one system of axes to another. Parabola, Locus of middle points of parallel chords, Tangents from ends of chords. Ellipse, construction by means of eccentric angle of points. Supplemental chords, construction of polar of a focus. Hy perbola. Asymptotes. Equations of tangents, etc. Conjugate diameters. Polar Equations of Hyperbola. The above list will serve to show the character of the work required.

ALGEBRA—Required in Classical and Latin-Science course: Quadratic Equations, their discussion and solution, geometric construction of the roots of an equation, problem of the lights; Simultaneous Quadratics; Surds and Imaginaries; Method of Solution by Synthetic Division; Composition of Equations.

SCIENCE.

ZOOLOGY—The work in Zoology for the past year was done before the erection of the east laboratory, and was therefore restricted to the study of animals large enough to be seen easily across the recitation room. Some desirable changes in this respect will now be practicable.

The pupils should perform the dissections, each taking his place at the table in turn, and when not thus engaged, making his notes and drawings. They must be allowed to come to the table when a closer view of organs is indispensible. No text book used by pupils, but the work done substantially as directed, for the animals studied in Colton's Elementary course in practical Zoology.

PHYSIOLOGY—For illustrations in physiology, the school possesses White's Physiological Manikin and two sets of wall charts. The work previously done by pupils, in the exercises of Zoology, has been found of some value in this connection.

BOTANY—In Botany no text-book is used, except for the purpose of classification, and no attempt made to teach structural botany, or any part of it, except as necessarily incidental to the classification of the plants studied. The object aimed at in the exercise is not to teach as much as practicable about plants, but to diminish the influence of the memorizing habit, change pupils' views of the purpose of text-books and increase the natural liking for direct methods of study.

The collection of plants is all done by the pupils; but they are required to do no other work outside of the laboratory. In the time allowed about fifty species are studied.

A recent change in the regulations will render it practicable to abandon, in great measure, the habit of simultaneous work (*i. e.*, a whole class studying the same species, under the teacher's direction,) which has not been found well adapted to develop the self-reliance of pupils.

PHYSICS—In Physics the pupils perform about two hundred and fifty of the experiments suggested in the text-book. An experiment is assigned to each scholar, and he is expected to make the necessary preparations out of school hours, and to perform the experiment in recitation, making such explanations as may be necessary to show its purport. Each scholar also has an opportunity to perform a few simple experiments calling for quantitative results, in the laboratory. These experiments have been shown to the class in recitation by some pupil. But some scholars need to do the work themselves in such subjects as specific gravity, accelerated motion, the pendulum, and heat.

CHEMISTRY—In Chemistry the scholars perform in recitation about two hundred experiments suggested by the text-book. The place of assignment being like that used in physics; about one-half of these are selected for laboratory work. These are divided into groups convenient for one day's work, and each scholar assigned days for performing them. In this part of the course two scholars work together, but are expected to write their notes independently of each other. After the conclusion of this part of the work the scholars analyze (qualitatively) as many solutions, etc., as the time remaining may allow--perhaps about twenty.

During school hours each pupil is required to work in the laboratory one hour and a half each week, and the laboratory is open two hours every school day, out of school hours, as the time alloted during session hours is found quite insufficient for the work.

Scholars are forbidden to bring their text-books in chemistry into the laboratory, but are allowed to consult them in the hall. They are also expected to leave their note books in the laboratory at all times, and to refrain from making any "fair copy" of laboratory notes.

The scholars have no reluctance to work in the laboratory out of the regular school hours.

HISTORY.

The work in history aids and supplements the study of literature, Latin, and Greek, the arrangement of the work being made with reference to those studies. This necessitates the English History by all the juniors and thus early in the work. The Roman and Greek History of the Classical and Latin-Science Courses aids the work in the Classics; while the English and European History of the Scientific Course prepares the way for the intelligent study of Civil Government at the close of the senior year.

The object of the work in History is to cultivate a taste for the reading of good histories, rather than commit to memory a single text-book. In order to accomplish this, a short lesson in the text-book is given as a basis or outline for the day's work. Each pupil is required to read some good author upon a subject connected with the lesson, to make a written abstract of what he has read, and from this abstract or from memory to give before the class an account of what he has read. These abstracts, of which each pupil prepares about seventy in one year's study, are preserved in a special note book and may be used for reference at any time.

BOOK-KEEPING.

Required of pupils in course in Science—optional with others. Course includes drill in business forms and methods. Book-keeping, double-entry, based upon actual business transactions among pupils. As many different lines of business are studied as the time will permit, care being taken to introduce only such items as occur in actual business. Neat and legible handwriting is insisted upon. Written work of the entire three years' course will strengthen habits of carefulness and accuracy formed in this branch of Junior Year work. In connection with this course is the business aritmetic, the purpose of which is to furnish ample exercise in the solution of business problems.

DRAWING.

The work in drawing, besides furnishing an excellent course in itself, directly supplement the mathematical work.

JUNIOR YEAR.

Freehand Drawing—One view, drawing of models. Projections of simple objects. Isometric projections of simple objects.

MIDDLE YEAR.

Instrumental Drawing—Geometrical problems. Projections, with paper developments. Drawings in architecture and machinery.

SENIOR YEAR.

INSTRUMENTAL DRAWING—Sketching in projection of structures. Making of plans and elevations from sketches. Working drawings of structures, buildings, machines, etc. Perspective.

MUSIC.

JUNIOR YEAR.

PHYSIOLOGY OF THE VOICE—Breathing exercises. Articulation. Formation of tone. Resonance. Form of vowels. Registers.

THEORETICAL—Formation of scales. Signatures. Transposition. Modulation. Kinds of poetry. Poetical accent. Musical accent, its signs. Terminology.

VOCAL—Singing at sight. Exercises in rhythm only. Exercises in pitch only. Drill on intervals and chords. Listening or ear exercises—from dictation, from chart or blackboard. Songs in two and three parts.

MIDDLE YEAR.

PHYSIOLOGY—Breathing exercises. Articulation. Formation of tone. Resonance. Form of words. Difficult combinations. Registers. Physiology of vocal organs.

THEORETICAL—Formation of scales. Signatures. Transposition. Modulation. Kinds of poetry. Poetical accent. Musical accent and its signs. Writing music from dictation.

VOCAL—Ear exercises. Memory exercises. Exercises in rhythm only. Exercises in pitch only. Drill on intervals and chords. Singing from dictation. Singing from chart or blackboard. Songs in three and four parts.

SENIOR YEAR.

Review of Junior Work concerning Physiology of the Voice.

THEORETICAL—Review of Junior Theoretical Work with these additions: Write from dictation. Triads on tonic, sub-tonic, and dominant, by sharps; by flats. Chords of the seventh. Common chord in different positions. Nature of sound. The great divisions of music. Give the names of some of the greatest composers of Europe and America.

VOCAL—Ear exercises. Part songs. College songs. Different intervals and chords.

LIST OF TEXT BOOKS FOR HIGH SCHOOLS.**

English—Whitney's Essentials of English Grammar. Kellogg's Rhetoric. Fletcher's Advanced Readings and Recitations. Hales' Longer English Poems. Plutarch's Lives. Ginn's Selections. Burke's Select Works by Payne, Vol. I.

Mathematics — Clarke's Algebra. Wentworth's New Plane and Solid Geometry. Wentworth's Trigonometry and Surveying with Tables. Wentworth's Analytic Geometry.

Latin—Collar and Daniell's Beginner's Latin Book. Harkness' Grammar. Harkness' Cæser. Allen and Greenough's Cicero. Allen and Greenough's Virgil. Collar's Latin Prose Composition.

Greek—White's First Lessons in Greek. Goodwin's Greek Grammar. Goodwin's Anabasis. Johnson's Homer's Iliad with Blake's Lexicon. Jones' Greek Prose Composition.

Science—Rattan's Botany. Steele's Physiology. Gage's Physics. Shepard's Chemistry. Sharpless and Philips' Astronomy.

History—Anderson's History of England. Barnes' General History. Smith's Smaller History of Greece. Smith's Smaller History of Rome. Macy's Civil Government.

Book-keeping—Childs' Book-keeping.

Music—Eichberg's New High School Music Reader.

** Every High School teacher is expected to supply herself with the text-books used in her department.

NUMBER OF RECITATIONS* PER WEEK.

	SCIENTIFIC	1st Term.	2d Term..	LITERARY	1st Term.	2d Term..	CLASSICAL	1st Term.	2d Term..
JUNIOR	Algebra	4	4	Algebra	4	4	Algebra	4	4
	English	5	5	English	5	5	English	5	5
	Science	4	4	Latin	5	5	Latin	5	5
	History	2	2	History	2	2	History	2	2
	Arithmetic	2	2	Arithmetic	2	2	Arithmetic	2	2
	Book-keeping	2	2	Book-keeping (optional)	2	2	Book-keeping (optional)	2	2
	Drawing, Music and Gen. Ex	4	4	Drawing, Music, & Gen. Ex.	4	4	Drawing, Music & Gen. Ex.	4	4
MIDDLE	Geometry	4	4	Geometry	4	4	Geometry	4	4
	Algebra	3	3	English	4	4	English	3	3
	English	5	5	Latin	5	5	Latin	5	5
	Science	4	4	Science	4	4	Greek	5	5
	History	2	2	History	2	2	History	2	2
	Drawing, Music & Gen. Ex.	5	5	Drawing, Music, & Gen. Ex.	4	4	Drawing, Music, & Gen. Ex.	4	4
SENIOR	Mathematics	7	7	Mathematics	4	4	Mathematics	4	4
	English	5	5	English	4	4	English	3	3
	Science	4	4	Latin	5	5	Latin	5	5
	History	2	2	Science	4	4	Greek	5	5
	Drawing, Music & Gen. Ex.	5	5	History (Civil Gov.)	2	2	History	2	2
				Drawing, Music, & Gen. Ex.	4	4	Drawing, Music, & Gen. Ex.	4	4

A Recitation Period is 45 Minutes.

COMMERCIAL SCHOOL.*

THEORETICAL DEPARTMENT.

Time, Six Months to One Year.

1. Arithmetic — Written and Mental. — Addition, by units, by units and tens, and by units, tens, and hundreds, until accuracy and rapidity are acquired ; Subtraction in like manner as Addition. Multiplication by aliquot parts of ten and powers of ten, by a common mean, by the dozen, and other short methods. Division in like manner as multiplication. Fractions, common and decimal. Denominate Numbers (excluding the metric system) by their application to practical problems, and mainly by figuring Bills suitably selected for nearly every kind of trade, introducing list price and discounts. Percentage and complete analysis of the problems of the same. Interest, ordinary and accurate, by the six per cent method.

2. English Language — Exercises to enforce correct forms of expression, both in speaking and writing.

3. Penmanship—All elementary drills necessary for neat and rapid writing.

4. Commercial Law—Thorough information on subjects of importance relating to the general principles of Contracts, Agency, Partnership, Corporations, and sale of Goods.

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* Teachers are required to have on their desks the text-books of their respective classes.

5. Geography — The chief productions, manufactures, exports and imports of the leading countries of the world; their general condition as regards civilization; the area, population, climate, and fertility of each; trade winds and ocean currents, their effect on navigation.

6. Duties and Rights—Discussions on themes to promote American ideas, with reference to National, State and Municipal Law, and contemporary events.

7. Stenography—From the twenty-four stems through the eight hooks with their combinations.

8. Book-keeping — A complete analysis of accounts in every department of business, involving simple and clear methods for the entire system of Double and Single Entry.

PRACTICAL DEPARTMENT.

Time, Six Months.

1. Arithmetic — Twenty minutes' daily review of the previous work. Percentage in all its applications. Interest by analysis and varieties of calculation. Annual and Compound interest. Partial Payments. Equation of Accounts. Stock and Bond Investments. Fire, Marine, and Life Insurance. Partnership and partnership settlements of ordinary occurrences. Foreign Exchange, Metric System.

2. Penmanship—Training for a bold and rapid business hand, consistent with legibility and uniformity.

3. English Language — Exercises to enforce business expressions. Letter writing—brief and concise.

4. Commercial Law—Weekly review questions. Commercial Papers, Insurance, Patents, Real Estate, and a few miscellaneous cases.

5. Duties and Rights—The same as in Theoretical Department.

6. Stenography—Additional contractions, acquisition of word-signs. Practice in phrase writing, and drill in writing from dictation.

7. Type-Writing—Dictation and Correspondence.

8. Business—Pupils are started in business with a certain capital, and are made to transact their affairs with the earnestness, exactitude and care observed in real life. Merchandise, Banking and Express Departments are fitted up with proper offices, and managed by reliable agents, selected from the most intelligent and energetic students.

This department is to represent, to all intents, a commercial community for the purpose of training in trade and speculation, of calling forth the powers of reason and thought, and of imparting useful information for a future guide.

The various transactions of the day furnish the basis for Book-keeping, the pupil being obliged to keep a complete set of books, neatly and systematically arranged, according to the nature and requirements of the business. All Book-keeping work is to be attended to at home.

Text Books—Rogers and Williams' Book-keeping. Packard's Commercial Arithmetic. Common school English. Clarke's Commercial Law.

EVENING SCHOOLS.*

COURSE OF STUDY.

THIRD GRADE—Time, One Year.

Reading—Second Reader, State Series, to Lesson XXXI.

Supplemental reading from the readers in the school library.

Spelling—Spell and teach the use of the words in the reading lessons.

Spelling should be taught by means of written exercises, and by the sentence method.

Penmanship—No. 1, Spencerian Copy Book. Thorough drill upon the small and capital letters. Have all exercises written in a neat legible hand.

Composition—Have pupils construct sentences from given words, from independent statements.

Written reproduction of stories from memory.

Short compositions on familiar subjects. Letters of friendship showing different forms.

Pupils should not be allowed to write compositions until they have a good knowledge of the subject, acquired through familiar talks given by the teacher.

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*Teachers are required to have on their desks the books of their respective grades.

In connection with the language work, have pupils learn the important uses of the capital letters, the period, the interrogation point, and exclamation point.

Reference Book and Guide for the Teacher—Common School English.

Arithmetic—Addition, subtraction, multiplication and division of whole numbers to 100.

The idea of fractions developed.

Table of United States Money, including simple bills, using whole numbers only. Pay particular attention to the addition of columns.

Drawing—Lines and angles taught.

Nos. 1 and 2, Bradfield's Drawing Blanks.

Geography—The shape of the earth taught from the globe.

Local geography of San Francisco and vicinity.

Teach pupils the most important facts about the industries of San Francisco.

Have pupils learn to distinguish and name the natural bodies of water by examining things around them.

Object Lessons—Familiar talks by the teacher, on domestic and wild animals, developing facts as to name, habits, distribution and uses.

Lessons on glass, silk, hemp, tea, starch, pepper, sugar, iron, gold, leather, etc., developing facts as to name, production, qualities, uses.

FOURTH GRADE—Time, One Year.

Reading—Second Reader, State Series, to Lesson XLI. Supplemental reading from the readers in the school library.

SPELLING—Spell and teach the use of the words in the reading lessons.

Spelling should be taught by the means of written exercises, and by the sentence method.

PENMANSHIP—No. 2, Spencerian Copy Book Edition 1888. Thorough drill upon the principles of the small and capital letters. Have all exercises written in a neat and legible hand.

COMPOSITION—Have pupils construct sentences from independent original statements.

Written reproduction of stories from memory.

Short compositions on familiar subjects.

Correspondence, including letters of invitation, letters of introduction, letters of application and letters pertaining to business.

Pupils should not be allowed to write upon any subject until they have a thorough knowledge of it, acquired through familiar talks given by the teacher.

In connection with the language work have pupils learn the important uses of the capital letters, the period, the interrogation point, the exclamation point, and one or two of the common uses of the comma.

REFERENCE BOOK AND GUIDE FOR THE TEACHER — Common School English.

ARITHMETIC.—Thorough drill in writing and reading numbers.

Addition, subtraction, multiplication and division of whole numbers, multipliers and divisors not to exceed three figures.

Continue to find the fractional parts of whole numbers.

The idea of Decimal Fractions developed.

Simple operations in United States Money, including bills.

Teach the tables of Long Measure and Avoirdupois weight.

Pay particular attention to the addition of columns.

Perform all operations as far as possible with concrete numbers.

DRAWING—Review lines and angles. Plane forms taught.

Nos. 3 and 4, Bradfield's Drawing Blanks.

GEOGRAPHY—Review the work of the Sixth Grade.

Locate and describe the hemispheres, the continents and the oceans.

California—Developing facts as to location, extent, boundary, area, physical features, productions, cities, commercial relations, education, history and character of people.

Draw a map of California, and teach what is meant by a map.

OBJECT LESSONS—Familiar talks on birds.

Lessons on color, teaching the pupils to distinguish and name the Primary and the Secondary colors.

FIFTH GRADE—Time, One Year.

READING—Second Reader, State Series, completed. Supplemental reading from readers in the school library.

SPELLING—Spell and teach the use of the words in the reading lesson.

Spelling should be taught by means of written exercises, and by the sentence method.

PENMANSHIP—No. 3, Spencerian Copy Book Edition 1888. Thorough drill upon the principles of the small and the capital letters.

Have all exercises written in a neat, legible hand.

COMPOSITION—Have pupils construct sentences from independent original statements.

Written reproduction of stories and sketches from memory.

Short compositions on familiar subjects.

Thorough drills in business forms and correspondence. paying particular attention to the proper manner of beginning, closing, folding and addressing letters.

Classify sentences according to use. Change one kind of sentence to another, declarative to interrogative, etc.

Synthesis and analysis of the simple sentence, having word modifiers only.

The idea of the phrase developed.

Lead pupils to discover the law governing position of the modifier.

Have pupils distinguish the parts of speech, omitting the participle.

Teach pupils the singular, the plural, and the possessive forms of the noun.

Teach verbs as complete and incomplete.

Teach the punctuation of the simple sentence.

Thorough drill upon the uses of the capital letters.

Reference Book—Common School English.

ARITHMETIC—Review the work of the previous grades.

Simple operations in addition, subtraction, multiplication and division of Decimal Fractions.

The idea of percentage developed.

Addition, subtraction of fractions having common denominator.

Operations in United States Money, including bills.

The tables of Square Measure and Liquid Measure taught.

Perform all operations, as far as possible, with concrete numbers.

comparing the leading features of Europe, Asia, Africa and Oceanica, with the similar features of North and South America.

Teach the geography of these divisions, developing facts as to location, extent, surface, soils, productions, climate. Also the geography of the countries of Europe, Asia, etc., developing additional facts as to leading cities, important industries, commercial relations, education, religion, form of government and character of people.

Teach what is meant by latitude, by longitude, by zones.

Draw map of the Eastern Hemisphere, showing principal points of interest.

Monteith's Elementary Geography used as a guide for the teacher and in the hands of the pupils.

Hygiene—Familiar talks with pupils on the more important laws of health.

SEVENTH GRADE—Time, One Year.

Reading—Third Reader, State Series, to Lesson CXXV. Supplemental reading from readers in school library.

Spelling—Spell and teach the use of the words in the reading lessons.

Spelling should be taught by means of written exercises, and by the sentence method.

Penmanship—No. 5, Spencerian Copy Book, Edition 1888. Have all exercises written in a neat, legible hand.

Composition—Written reproduction of stories and sketches from memory.

Short compositions on historical subjects of American History.

Pay particular attention to paragraphing.

Business Forms and Correspondence reviewed and extended. (See Fourth Grade work.)

Synthesis of sentences showing the uses of the phrase and the clause in the sentence.

Teach the change in the verb to agree with its subject in the third person, singular number.

Teach the agreement of the subject and the verb, the agreement of the pronoun with its antecedent, and the agreement of the subject with the predicate noun or pronoun used as an attribute

Continue to drill upon the principles of punctuation, and the use of capital letters.

Review Grammar work of previous grades.

Arithmetic—Review work of previous grades.

Advanced State Arithmetic in the hands of pupils.

Addition, subtraction, multiplication and division of compound numbers. Continue to drill on finding the cost, and the measurement of wood, land, carpets, lumber, hay, grain, brick and masonry.

Teach longitude and time, percentage, commission and simple interest.

Mental Work—Same topics as written work.

Drawing—No. 7, Bradfield's Drawing Blank.

History—History of the United States through discoveries, settlements, colonial wars, and revolutionary war, aying particular attention to causes. This work is to be lone in connection with the study of geography.

Geography—Geography of the Western Hemisphere to be tudied in connection with the History of the United States.

Winds, their causes, and their relation to commerce and to limate.

HYGIENE— Familiar talks on the laws of health, and the effects of alcohol and tobacco on the human system—Smith's Primer.

EIGHTH GRADE—TIME, ONE YEAR.

READING—Third Reader, State Series, completed. Supplemental reading from readers in the school library.

SPELLING—Spell and teach the use of the words in reading lessons. Teach written spelling and by sentence method.

PENMANSHIP—No. 6, Spencerian Copy Book Edition 1888. Have all exercises written in a neat, legible hand.

COMPOSITION—Short compositions on historical events in American history.

Thorough drill on correspondence of all kinds.

Teach pupils how to acquire clearness, strength and beauty of expression.

Use State Grammar.

Review language work of previous grades.

ARITHMETIC—Review the work of previous grades.

Teach Taxes, Insurance, Partnership, and Square Root, with its application.

State Series of Arithmetics in the hands of pupils.

MENTAL WORK—Same topics as in written work.

DRAWING—No. 8, Bradfield's Drawing Blank.

HISTORY—History of the United States completed from the Revolutionary War. This work is to be done in connection with the study of Geography. (State Series.)

GEOGRAPHY—Geography of the United States to be studied in connection with the history.

Tides and ocean currents, their relation to commerce and climate.

Physics—The theory of matter and simple machines with calculations.

MISCELLANEOUS FOR ALL GRADES.

Morals and Manners—Teach pupils to be cleanly, neat polite, obedient, industrious, punctual, trustworthy, honest, truthful, kind, and patriotic.

Reference Book—Good Behavior.

Music—Exercises to be given in music if time permits.

In Music—Loomis's Progressive Music Lessons, Nos. 1, 2, 3, and 4.

OTHER CLASSES.

Besides the regular course in the Primary and Grammar grades. Book-keeping, Mechanical Drawing, and Foreign classes will be organized to accommodate those applying.

SPANISH LANGUAGE.

Combined Spanish Method by De Tornos.

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PUBLIC SCHOOLS

OF

SAN FRANCISCO.

COURSE OF STUDY.

SAN FRANCISCO:
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1891

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COURSE OF STUDY

—FOR THE—

PUBLIC SCHOOLS.

1891.

COURSE OF STUDY.

RECEIVING CLASS.

[Children are admitted to this Class at 5 years of age.]

Reading, Writing, Language, and Spelling.

Principles.

I. In teaching reading, the order of development is: (1) the idea, (2) the spoken word, (3) the printed word, (4) the written word, (5) utterance.

II. Children should be trained to read in an easy, natural tone of voice, very much as they talk, only a little more distinctly.

III. Beginners should be taught by a judicious combination of the word method, letter or spelling method, and the phonic method.

IV. When children begin to use a book, train them to stand erect and hold the book in the left hand.

General Outlines.

Time, 12 hours a week.

1. Oral Lessons: Purpose—to accustom pupils to express their thoughts in simple and correct forms of speech. Material—reading and observation lessons, pictures, or whatever the ingenuity of the teacher may suggest.

2. Reading: (*a*) From the blackboard, short sentences, expressing, in the pupils' own words, thoughts suggested to them through observation and conversation; such sentences being taken as will easily lead to a gradual recognition of words. Later, the acquaintance with words must lead to the

analysis of the spoken word into its elementary sounds, and of the corresponding written word into the letters, or combination of letters, representing those sounds. (*b*) From a chart. (*c*) From authorized first readers, and from the supplementary books of corresponding grade. (*d*) A few pieces of suitable poetry must be studied and learned for recitation.

3. Pupils must be so guided as gradually to gain the power for themselves of making out the words of a sentence, and of getting its thought. Distinct articulation, good tones, and expression must be the aim from the beginning. After the first four months, the early lessons in the first readers of the circulating sets can be used with advantage.

4. WRITING. (*a*) Copying words and sentences from the blackboard and from slips. (*b*) The forms and names of letters learned. (*c*) Simple sentences written from dictation.

SPECIFIC DIRECTIONS.

1. The teacher will study carefully the suggestions on the first pages of the State First Reader.

2. Beginners must be taught from blackboards and charts.

3. Put words on the blackboard both in print and in script, side by side.

4. Select from any good Primer or First Reader, 50 or more easy words.

5. In beginning writing, let one-half the class practice on the blackboards and the other half on slates.

6. After the first three or four months, let pupils occasionally take a lesson with pens and paper.

7. In spelling, use both the oral and the written method.

8. Teach pupils to spell suitable words selected from their reading lessons. They should not be required to spell from memory all the words they find in their lessons, because their ability to read and pronounce words runs far ahead of their memory to spell them.

9. The words which children are most interested in spelling are the names of common objects at home or at school; the

names of things they eat or wear; the names of boys and girls; of animals. For groups of words teachers are referred to the first month's work in Swinton's Word Primer.

10. Do not be afraid of letting children spell easy words of two syllables; they are no harder than monosyllables.

11. In blackboard writing, see that your pupils form the habit of holding a crayon properly.

12. Give an occasional drill-exercise in making large ovals in order to secure freedom of arm-movement.

13. Teach children to write both capital and small letters from the beginning.

14. In slate-writing, use only long pencils, and train your pupils to hold them as a pen is held.

15. Give an occasional drill-movement in making running m's and ovals, in order to secure freedom of arm-movement and an easy way of holding pencils or pens.

16. Use ruled spaces on blackboards and slates.

17. After the first few months let the children buy and use a State First Reader, taking the first 20 or 30 lessons. Or take from the library once a week a set of Supplementary First Readers, and interest pupils in something new.

18. During the last month of the school year, ask your pupils to take home their First Reader and read aloud a few lessons to their fathers and mothers.

19. For suggestive methods in teaching reading, teachers are referred to Partridge's "Quincy Methods."

Language Lessons.

1. Lead children to talk by asking them to tell what they know about common things, such as cats, dogs, dolls, goats; about things they eat or wear; about what they saw in coming to school.

2. Ask them to tell their name and age, using a sentence thus:

(1). My name is —— ——

(2). I am — years old.
(3). I live on —— street.

3. Teach every child, as soon as possible, to write his own name.

4. Ask children to tell the names of their cats, dogs, and dolls, and let them write the names as soon as they learn to write.

5. Tell children some short, simple story, and ask them to tell it back to you.

6. A teacher who can tell a story well holds the key to the hearts of children.

7. For further suggestions about conversation lessons, teachers are referred to Calkin's Object Lessons, pages 39 to 47, and Partridge's "Quincy Methods."

Number Lessons.

I. The first lessons in counting must be taken with small objects, such as shells, sticks, buttons, etc., on the desks of the pupils.

II. The first comparisons of small numbers must be made by means of objects handled by the children themselves.

III. Every lesson in numbers must also be a lesson in language. The teacher must require the pupil to speak as much as possible.

I. GENERAL OUTLINE.

2 Hours a Week.

Numbers from One to Ten, inclusive.

1. Adding and subtracting with objects:
   (1) Without figures.
   (2) With figures.
2. Multiplying and dividing with objects:
   (1) Without figures.
   (2) With figures.

3. Coins: dime, five cent piece, (nickel). Pint, quart, inch.

II. SPECIFIC DIRECTIONS.

1. In the beginning, during the first three or four months take up combinations of numbers to 5, according to the Grube Method. Afterwards, continue a few combinations to 10. For detailed illustrations of this method the teacher is referred to the Appendix to this Course of Study, or to "Methods of Teaching," pp. 196 to 207.

2. At the outset let the children actually handle whatever objects are used as "counters," and make the different combinations before they are asked to express them by figures.

3. The teacher will also make use of the "State Primary Number Lessons," taking first, 10 or 12, or 16 lessons: afterwards as far as lesson 40.

4. Children must be trained to make correctly the figures from 1 to 10 both on blackboards and slates. See that they make them in the right way from the beginning.

5. Pass around the class the following coins and train pupils to *observe* them closely: the five cent piece or nickel; the dime; the quarter-dollar; the half-dollar; the dollar.

6. Train children how to measure inches and feet by making them actually measure lines on the blackboard.

7. Drill in writing and adding on slates and blackboards short columns of units—the sum not to exceed 10.

8. Give the simplest kind of examples in the written form of subtraction,—the largest number not to exceed 10.

9. Teach pupils how to write $\frac{1}{2}$ and $\frac{1}{4}$, and cut up apples to illustrate these fractions.

OBSERVATION LESSONS.

On Plants, Animals, and the Human Body.

I. Flower, leaf, stem, root, bud, fruit, seed.
II. Domestic and other common animals.

III. The parts of the human body, and their uses and movements.

IV. The care of the body and of health.

Note.—Teachers are referred to Partridge's "Quincy Methods" as an invaluable aid in such exercises, and to Sheldon's Elementary Instruction.

Training in Politeness.

1. In the beginning of school-life, teachers must bear in mind that the home surroundings of some children are such that they have little or no training in good manners except at school. Many children need to be taught the language of courtesy and politeness.

It is a good plan for the young teacher of even a receiving class to have a set time of five or ten minutes, say once a week, on Monday morning, for little motherly talks on good manners. Teachers must bear in mind that their own manner is imitated by pupils; that they themselves must be careful of their own personal habits; of their tones of voice, and expression of countenance.

2. Teachers should lead children to offer them any little services, and any such attentions should be promptly acknowledged.

3. The older children should be made to understand their duty in aiding the younger ones.

4. Even the little children should be trained how to answer the bell, say good morning to visitors at school, and politely ask them to enter. Train children to this by allowing other pupils to play the part of visitors.

5. Train children to use, in their intercourse with the teacher and one another, the polite forms of good society.

6. For suggestions as to talks on politeness, teachers are referred to a little book entitled "How to Teach Manners," by Julia M. Dewey, (published by E. L. Kellogg & Co.) Every teacher who once sees this book will have it on her school desk.

STATE SCHOOL LAW.

"SECTION 1667. Instruction must be given in all grades of schools and in all classes, during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics, and their effects upon the human system."

PHYSICAL TRAINING.

Twice a Day.

NOTE.—Physical training, including free play under the direction of the teacher, is a necessity in the Primary School. The time set apart for physical training and recesses must be so used as to meet the physical needs of the pupils. Consequently, recesses shall be given for withdrawals from the room, for the ventilation of class-rooms and for recreation. If for any reason recesses are shortened and omitted, the time for the same must be given to physical training.

1. Daily exercise in free-arm movements.
2. Kindergarten motion songs.
3. Give exercises in rapid changes of position for training pupils to habits of promptness, obedience and quietness.
4. Arm, leg, trunk, hand and feet exercises.
5. Keeping step in marching.
6. Very simple directions to children about cleanliness of hands and face, and care of the hair and teeth.

MORAL TRAINING.

30 Minutes a Week.

I. Teachers are directed to give instruction for a few minutes in good manners and good morals at the opening of school in the morning and at other favorable opportunities. In giving this instruction, teachers should keep strictly within the bounds of manners and morals, and thus avoid all occasions for treating of or alluding to sectarian subjects.

II. Teachers will seek to plant in the minds and hearts of their pupils the principles of right living, especially of temperance; and thus, in spirit and in letter, to carry out the law that requires teachers to explain to their pupils the effects of the use of narcotics and alcoholic stimulants on body and mind.

III. For outlines of lessons teachers are referred to Sheldon's Elementary Instruction.

Kindergarten Work.

☞ No teacher is held responsible for this work unless suitable materials are supplied by the Board of Education. For instructions in detail, see Appendix to this Course of Study.

FIRST GRADE.

Reading, Writing, Language and Spelling.

I. Train pupils to stand erect and hold the book in the left hand.

II. Train them to read clearly and distinctly.

III. Train pupils to use their lips and open the mouth when they read or speak.

I. General Outlines.

11 Hours a Week.

1. Oral and Written Exercises: (*a*) The oral expression of the substance of passages read from the regular and supplementary readers. (*b*) Short stories told or read to the pupils, and reproduced by them orally. (*c*) Simple thoughts suggested by pictures or by the observation lessons, to be expressed in writing.

2. Reading: (*a*) From the State First Reader. (*b*) From the supplementary books furnished. (*c*) At sight, from the circulating sets of first readers. (*d*) Maxims and appropriate selections of poetry, to be learned and recited.

3. The object of reading—getting the thought—should be kept constantly in view. Correct pronunciation, good tone, and right expression are to be insisted upon. The "sounding" of known words is generally a waste of time and effort. Unknown words, when phonetic or nearly phonetic, should be

made out, by "sounding" them. Practice on the elementary sounds and on consonant combinations helps to distinct articulation and to pure tone.

4. WRITING: (*a*) Copying exercises from the blackboard and from slips. (*b*) Writing selections from the reading book. (*c*) Sentences, and names of individuals with their residences, to be written from dictation.

SPECIFIC DIRECTIONS.

1. State First Reader to lesson 60, three lessons a week. Teachers are requested to read the Preface to the State First Reader.

2. At least twice a week let the class take a set of Supplementary Readers, or leaflets from the school library, and read at sight supplementary selected lessons somewhat easier than those in their regular reader.

3. Instead of endless reviews of old lessons, let your pupils have new matter that will awaken interest and excite thought.

4. By suitable questions, lead pupils to think about the meaning of what they read.

5. Give phonic concert drill on the words placed at the head of each reading lesson for that purpose. Train pupils to use their lips and tongue in articulation.

6. While one division of the class is reading, let the other section copy the whole or a part of the lesson on slates or paper.

7. Train pupils in spelling suitable words selected from reading lessons, omitting unsuitable ones. Children ought not to be required to memorize the spelling of all the words they learn to pronounce.

8. Make out for your class short lists of names of common things, and of words which children use in daily speech, put them on the blackboard, and have them copied. For assistance in this grouping of words, teachers are referred to Swinton's Word Primer, first five months' work.

9. Combine oral spelling with written work on slate, paper or blackboard.

10. An oral spelling match is a good thing to stir up a class that has become weary of writing.

11. Take occasional exercises, both written and oral, in spelling the names of things that are good to eat; of articles of home or school use; of names of animals; of household words.

12. In writing, train children to sit correctly at the desk, and to hold the pen easily and properly.

13. Teachers who desire to do so can use a copy-book in this grade, but it is better to teach writing from the blackboard.

14. During the last two months of the year, ask your pupils to carry home their First Reader and read a few lessons aloud to their father and mother, to show them how well they can read.

15. For further suggestions, teachers are referred to Partridge's "Quincy Methods," and Swinton's Elementary Instruction.

Language Lessons.

Principles.

I. Speech is acquired mainly by *imitation.*

II. Imitation precedes *originality.*

III. Language precedes *arithmetic.*

IV. The purpose of language lessons is to add to the child's stock of words, and to secure a correct use of those words in speaking and writing.

Specific Directions.

1. Short talks with children for the purpose of developing expression are very effective, but such exercises depend for success largely on the tact, skill and ingenuity of the teacher.

2. Tell children a short, simple story, and ask them to tell it back to you.

3. You can do almost anything with children if you will only tell them interesting stories.

4. Let one section of the class copy on slates or paper a part of a reading lesson while the others are reading. This is an exercise in punctuation, spelling and the use of capital letters.

5. Take occasional exercises in the oral spelling of such words as eyes, nose, ears, mouth, lips, teeth, hair, head, etc. Short written sentences using such words as:

1. "I have two eyes."
2. "My eyes are blue."
3. "I see with my eyes."

6. Conversations about the use of the five senses; on domestic animals; on common objects.

7. Use of capital letters in writing the names of men and women, boys and girls: of names of cities, towns, states and the United States.

8. Let the class pick out the words in a reading lesson that begin with a capital letter, omitting the words at the beginning of a sentence. (Exercise on nouns).

9. Let pupils select out of reading lessons the names of objects. (Exercise on nouns).

10. Use of capital letters in writing the names of days and months.

11. Use of the period and question mark. Call attention to their use in three or four reading lessons.

12. The word *I* always to be a capital.

13. Correct use in short sentences of *is, are; was, were; see, saw; has, have; go, went; do, did; etc.* Use of *a, an.*

14. Teachers must give patient and persistent attention to the correction of vulgarisms, provincialisms, and current blunders in speech, without waiting for any grammatical knowledge whatever.

15. Teachers will write a short story on the blackboard to be copied by pupils.

16. Require pupils to make up a short composition on such

subjects as "My Doll," "My Dog,' "My School," "My Vacation," etc.

17. SENTENCE MAKING: Make a sentence with each of the following nouns by adding one word to tell what animals *do.*

RULE.—*Begin every sentence with a capital, and end it with a period.*

Model Sentences.—Bees *buzz,* dogs *bark.*

1. Bees ——
2. Bears ——
3. Cats ——
4. Dogs ——
5. Ducks ——
6. Hens ——
7. Mice ——
8. Parrots ——
9. Birds ——

For further examples the teacher is referred to "Methods of Teaching," pp. 262 and 263.

18. COMPOSITION-WRITING: Let pupils write all they can remember about any one of the following stories: Little Red Riding Hood, Jack the Giant Killer, Cinderella.

19. Require every pupil to write his own name and address, also the names of his brothers and sisters, of his father and mother, of his teacher, of five of his classmates.

20. For other suggestive exercises the teacher is referred to the following books: Hackett and Kennedy's "Common School English," Swinton's Word Primer, Methods of Teaching, pp. 258 to 265, "State Lessons in Language," first ten lessons, Partridge's "Quincy Methods," and Sheldon's Elementary Instruction.

NUMBER LESSONS.

General Principles.

I. The two main things to be considered in these lessons are: 1. Accuracy. 2. Clearness of conception.

II. New combinations must be illustrated at first by objects.

III. For young children, arithmetic is not *easy,* but rightly taught, it is interesting.

I. General Outlines.

Time, 40 minutes a day.

I. Numbers from One to Twenty, inclusive.

1. Combinations of ten with ten and with numbers smaller than ten.

2. Adding, subtracting, multiplying, and dividing with objects, (1) without figures and (2) with figures—no multiplier or divisor greater than ten required.

3. Simple relations of numbers from one to twenty, inclusive.

4. Coins, continued. Pint, quart, gallon. Inch, foot, yard.

II. Numbers from One to a Hundred, inclusive.

1. Combinations of tens, and of tens with smaller numbers.

2. Adding, subtracting, multiplying and dividing numbers from one to fifty, inclusive, (1) without and (2) with figures—no multiplier or divisor greater than ten required.

3. Coins, continued. Day, week; month, year. Dozen.

III. Specific Directions.

1. State "Primary Lessons in Numbers" in the hands of teachers—first sixty lessons.

2. Exercises in adding, subtracting, multiplying and dividing numbers by the Grube method. For illustrations of methods see Appendix to the Course of Study.

3. Make sure that your pupils can count *objects, not abstract numbers,* to 50. Use shells, buttons, sticks, grains of wheat or barley, etc.—kept in small boxes, and actually handled by pupils in counting on their desks. Show them how to keep tally by marks on the blackboard, thus: 𝍸, 𝍸, 𝍸, 𝍸 = 20.

4. Teach the use of the signs +, −, ×, ÷, =.

5. Teach the reading and writing of numbers to 100.

6. Teach with small numbers the customary forms of addition, subtraction, multiplication and division, such as are used in working with larger numbers.

7. Make a game of counting, by letting pupils stand in line around the room and requiring those that miss their count to take their seats. Exercises—Count forward and backward to 50; (1) by 2's; (2) by 4's; (3) by 5's; (4) by10's. Also by $\frac{1}{2}$'s, as $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, etc.

8. Teach pupils to write the fractions $\frac{1}{2}$, and $\frac{1}{4}$; then, to add them on slates or blackboards, thus:

(1)	(2)	(4)	(5)
$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{2}$
$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	
$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	
$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{4}$
2	1	6	$\frac{3}{4}$

Of course, the teacher will illustrate such fractions by cutting of apples, or by breaking up crayons, or sticks, or pencils. Say nothing about numerator or denominator. An example like the 4th will be worked by the children if you only give them a chance to think it out before you tell them how to do it.

9. Give your pupils examples in adding tenths, thus: 1-10 + 1-10 + 1-10 + 1-10 + 1-10 + 1-10 + 1-10 + 1-10 + 1-10 + 1-10 = 10-10 or 1.

10. Next teach them to write *tenths*, thus: .1 + .1 + .1 + .1 + .1 = .5, etc. For further illustrations of the first steps in decimals, the teacher is referred to the Appendix to the Course of Study.

11. Pass around the class each of the following small coins: The half-dime, or "nickel," the dime, the quarter-dollar, the half-dollar, the dollar. Ask your pupils to examine them very closely, and then question them. Make up easy questions in reckoning, such as: How many dimes are equal to a half-dollar? To a dollar? How many quarter-dollars are equal to a half-dollar? To a dollar? etc.

12. Teach pupils how to write dollars and cents, as $1.00, $1.25, $1.50, etc.

13. Drill on multiplication table to 5's.

14. For further suggestions, teachers are referred to Partridge's "Quincy Methods," "Methods of Teaching," and for a practical hand-book of simple examples to Ginn's "Number Lessons."

OBSERVATION LESSONS.

I. CONVERSATION LESSONS ON ANIMALS.

1. Ask questions like the following:

   (1.) What is the dog good for?
   (2.) What does the dog eat?
   (3.) What is the color of your dog?
   (4.) What does a dog know, etc.

ANIMALS.—Dog, cat, goat, horse, rabbit, donkey, cow, hog, hen, pigeon, sparrow, frog, butterfly, house-fly.

II. ORAL INSTRUCTION LESSONS.

(1.) OBJECTS. — Leather, wool, fur, cotton, wheat, bread, butter, potato. Object to be brought into the class-room.

(2.) FRUITS.—Apple, peach, pear, apricot, grape, cherry, (in season.)

(3.) PLANTS.—Flower, leaf, stem, root, bud, fruit, seed. Allow children to draw rough sketches on slates or practice paper, of stem and leaves from actual objects on the desk, followed by drawing some simple wild flower.

(4.) COLORS.—Primary colors from charts.

(5.) DIRECTION.—Right, left; east, west, north, south.

(6.) QUALITIES OF OBJECTS.—Soft, hard; sweet, sour; bitter, salt; tough, brittle; rough, smooth, etc.

(7.) NATURAL PHENOMENA.—Sky, clouds, rain; sun, moon, stars; land, water, plants, seeds sown in school-yard garden, in window boxes or at home.

(8.) PLACE.—Model of a "SCHOOL-ROOM LESSON."

1. What is the part over your head called?
2. What is the part under your feet called?
3. How many sides has this room; how many ends?
4. How many walls?
5. Point out the right wall; the left; the front; the back.
6. How many windows are there?
7. How many doors?
8. How many desks on the floor?
9. What hang on the walls?
10. Point to where the sun rises; sets.
11. Face north; south; east; west.
12. Point to where the sun is at noon.

ADDITIONAL.

(*a.*) The rising and setting of the sun.
(*b.*) " " " " " " moon.
(*c.*) " " " " " " the stars.
(*d.*) Movements of the air; wind.

NOTE.—For further suggestions, teachers are referred to Partridge's "Quincy Methods" and Calkins's Object Lessons, or Sheldon's Elementary Instruction.

DRAWING.

1. No drawing book will be used. Teachers will allow pupils to use practice paper, slates and blackboards. The work in drawing in this grade is left largely to the skill, tact, ingenuity and good sense of the teacher.

2. If you wish to give children an unfailing source of delight, let them bring into the class a cheap box of paints and some old picture books. Then set them at work in coloring the pictures.

3. Bring into the class a collection of leaves, put a leaf on each desk, and let each child try to draw it.

The order of a series of elementary drawing lessons is about as follows:

1. The representation of common objects bounded by straight lines, such as a post, a stool, a bench, a box, a ladder, a comb, a bed, a clothes-horse, a table.

2. The duplication of straight lines as seen in various common objects, such as the preceding series.

3. The representation of common objects in which curves appear, such as a clock, an arched window, a kite, a jug, etc.

4 The representation of symmetrically divided objects needing measurement with the eye, such as a window showing panes, a door showing panels, a Maltese cross, the front of a house, etc.

As soon as children have acquired some facility in drawing from the flat they should draw from models.

The teacher should always show young pupils where to begin in drawing an object, and should draw it himself a part at a time, on the blackboard, taking care that they keep pace with him. A complex-looking object frightens a child, but if it be decomposed and presented a line at a time, he is encouraged to attack it. There is this further advantage in this method: the children are kept well together and are prevented from wasting their time in needless use of the India-rubber.

HEALTH, MORALS AND POLITENESS.

"Section 1667. Instruction must be given in all grades of schools and all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California.*

"Section 1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism; to teach them to avoid idleness, profanity and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties and dignity of American citizenship."

--*School Law of California.*

I. Physical Training.

1. Calisthenic drill at least twice a day.
2. Kindergarten motion songs.
3. Breathing exercise once a day.
4. Insist on cleanliness of face and hands.
5. Try to secure tidiness of dress.
6. Five Rules of Health.

   (Require pupils to learn these by heart).

   1. Go to bed early and sleep from nine to ten hours every night.
   2. Do not drink strong tea or strong coffee.
   3. Brush your teeth every day.
   4. Do not hold your book too near your eyes.
   5. Keep your feet dry and warm.

II. Training in Politeness.

Note.—Teachers are requested to read the suggestions made to teachers of Receiving Classes.

1. "Politeness is to do and say the kindest thing in the kindest way."

2. To teach politeness one must be able to stimulate the imagination of a child sufficiently to enable him to put himself in sympathy with others, and to do something to increase their pleasure or comfort.

3. Let children understand that, to be polite, is merely to be thoughtful and unselfish.

4. Moral precepts are best enforced by familiar talks that present the highest aim and *encourage* rather than *forbid.*

5. Always bear in mind that children of all ages remember what they take part in, longer than what is told them; and let your energy be given to drawing rules of conduct from them, rather than to the rehearsing of words of wisdom.

Topics for Lessons.

(1.) Kind treatment of schoolmates.
(2.) Care in not interrupting teachers.

(3.) The impoliteness of whispering in company or in school.

(4.) Respectful treatment of visitors.

(5.) Respectful treatment of school officials.

(6.) Respectful treatment of the janitors.

(7.) Manners at the table.

(8.) Politeness at home to father, mother, brothers and sisters.

NOTE.—"How to Teach Manners in the School Room," by Julia M. Dewey, (E. L. Kellogg & Co., N. Y.), is a little book that teachers ought to have always at hand on their desks.

III. MORAL TRAINING.

Opening Exercise, 30 Minutes a Week.

I. Teachers are directed to give instruction for a few minutes in good morals at the opening of school in the morning and at other favorable opportunities. In giving this instruction, teachers should keep strictly within the bounds of manners and morals, and thus avoid all occasions for treating of or alluding to sectarian subjects.

II. Teachers will seek to plant in the minds and hearts of their pupils the principles of right living, especially of temperance; and thus, in spirit and in letter, to carry out the law that requires teachers to explain to their pupils the effects of the use of narcotics and alcoholic stimulants on body and mind.

SPECIFIC DIRECTIONS.

1. Talk to children about their duties to their parents.
2. Talk to your pupils about kindness to animals, particularly to dogs, cats and birds.
3. Teach boys not to fight, except in self defense.
4. Teach pupils to tell the truth.
5. Train them not to be selfish.
6. Explain to boys the danger of smoking cigarettes.
7. Read or tell to pupils short anecdotes, or stories to illustrate any good moral qualities.

SECOND GRADE.

I. In this grade children can begin to learn a variety of things without being forced or crowded, if principals and teachers take a common-sense view of the Course of Study and keep within reasonable limits.

II. "Teachers shall assign no lessons whatever for home study to pupils in the first, second and third grades."

—*Rules of the Board of Education.*

Reading, Writing, Language and Spelling.

I. "The intellectual training to be given in the elementary schools must, of course, in the first place, consist in learning to use the means of acquiring knowledge, or reading, writing and arithmetic; and it will be a great matter to teach reading so completely that the act shall have become easy and pleasant."

—*Huxley.*

II. In this grade children begin to think about the meaning of what they read, and to read for information, or for the pleasure of getting new ideas.

III. Stimulate their curiosity by encouraging children to read story books at home, just for the sake of the new stories.

I. General Outlines.

Time, 10 Hours a Week.

1. Oral and Written Exercises: Purpose and material as in the First Grade. (*a*) The substance of reading lessons to be expressed orally. (*b*) Short stories read silently, and then reproduced orally and in writing. (*c*) Stories written from pictures. (*d*) Letter-writing begun.

2. Reading: (*a*) From the State Reader. (*b*) From the supplementary books furnished. (*c*) At sight, from the circulating second readers. (*d*) Appropriate selections of poetry are to be learned and recited.

3. There should be no merely mechanical reading. The

mind should take in the thought, and the reading should express that thought. The silent reading of passages--the result to be tested by oral or written reproduction—will be found a valuable exercise. Concentrate the attention of the whole class upon every exercise. The greater the interest, the surer and the more abiding the result. The reading of poetry should not be omitted because of the "sing-song." Train your pupils to avoid "sing-song."

4. WRITING: (*a*) Copying from the blackboard and from slips. (*b*) Writing selections from the reading book. (*c*) Words, phrases, sentences, and short letters and stories, written from dictation.

II. SPECIFIC DIRECTIONS.

1. State First Reader completed. Take two lessons a week. Teachers will read the preface to the First Reader.

2. Take two exercises a week in reading, at sight, new lessons from sets of supplementary readers in the school library.

3. Occasionally, while one section is reading, let the other division copy several paragraphs from the Reader as an exercise in spelling, punctuation and capitals.

4. Give concert drill on the phonic spelling of words placed at the head of each reading lesson for the purpose. Also take, in the same way, every lesson headed "Phonic Drill."

5. Let pupils memorize Lesson 83, and afterwards write it out from memory, on paper, as an exercise in capitals and spelling.

6. In taking up the lessons in the State Reader, pursue the following course:

I. Read the lesson to the class.
II. Explain any difficult words.
III. Then allow five minutes for pupils to study it silently.
IV. Require pupils to read singly.
V. Close the books and ask questions.

7. Train pupils to read loud enough to be heard distinctly by every member of the class or division.

8. Train them to stand erect and hold the book in the left hand.

9. Occasionally take a concert drill in breathing exercises, and in giving the vowel sounds a, e, i, o, u, as long as they can be continued with one breath.

10. Select for spelling suitable lists of words from reading lessons, leaving out the unsuitable ones.

11. Make out lists of grouped words, such as names of animals, things on the table, articles of food, names of common flowers, etc.

12. For additional groups of words for oral or written spelling, teachers are referred to "Swinton's Word Primer," first year's work. Once a week ask your pupils to take home their First Reader and read aloud to their fathers and mothers.

Language Lessons.

General Principles.

I. *Ideas* before words.
II. *Thought* before expression.
III. Expression before scientific rules.

Specific Directions.

1. Once a week read or tell to the class the best short story you can find or make up, and require pupils to reproduce it in their own language.

2. Once in two weeks let pupils write a very short, simple letter. At first, let pupils copy from a letter put on the blackboard.

3. Let the pupils memorize a choice stanza of poetry and then write it out from memory, as an exercise in capitals, spelling and punctuation.

4. Occasionally, let pupils copy a short paragraph from the Reader with open book. Then let them exchange slates or paper, and correct one another's work by comparing with the book.

5. Occasionally, have pupils make up short compositions from pictures.

6. Train each pupil to write: (1) His own name; (2) the name of his father and mother; (3) the name of the place in which he lives; (4) the name of his teacher; (5) the name of his school; (6) the name of one of his schoolmates. (All examples of proper names).

7. Occasionally, let the class select from a reading lesson names of persons or places that begin with a capital letter. (Proper nouns).

8. The spelling and correct use of the name of days and months, with their abbreviations. (Proper nouns).

9. Exercises in writing short, simple sentences beginning with a capital letter, and ending with a period. Teachers will make use of the first 20 lessons of the "State Lessons in Language."

10. Exercises in writing short questions.

11. Exercises in writing nouns that denote ownership. (Apostrophe and *s*.)

12. Teach by means of sentences the correct use of the following verbs in their present and past tenses: *Am*, (is, are, was, were,) see, do, know, come, give, write, take, go, eat, speak, run, ride, rose, sit.

13. Examples in sentences of the correct use of the pronouns *he*, *she* and *I*.

14. Have pupils write sentences containing such words as: knew, *new*; here, *hear*; whole, *hole*; pear, *pair*; to, *too*, *two*, etc.

15. Teach pupils how to use initial letters in writing names of persons.

16. Teach by written sentences and by conversation the proper use of such adjectives as *well*, *slowly* and *swiftly*; also, such adjectives as *good*, *slow*, *swift*.

17. Train pupils in writing such common contracted forms as don't, doesn't, hasn't, isn't, etc.

18. Exercises in the use of the articles *a, an, the.*

19. Exercises in selecting from a given reading lesson: (1) All the nouns. (2) All the proper nouns. (3) All the verbs. (4) All the articles. (5) All the pronouns. (6) As many adjectives as pupils can find. (7) As many prepositions as they can find. (8) As many conjunctions.

20. Teachers are referred for additional exercises in sentence-making to the first 50 lessons in the "State Lessons in Language," Swinton's Language Primer, First Year's Work, Haskell & Kennedy's Common School English, "Methods of Teaching," pp. 258 to 268, Partridge's "Quincy Methods."

ARITHMETIC.

Principles.

I. Every lesson in numbers should be also a lesson in language.

II. In beginning a new form of operation, use only small numbers.

III. Accurate results are vastly more important than rapid work.

IV. Give slow pupils a chance by allowing plenty of time for them to do their work.

I. GENERAL OUTLINES.

3 1-2 Hours a Week.

NUMBERS FROM ONE TO A THOUSAND, INCLUSIVE.

1. Combinations of hundreds, and of hundreds with smaller numbers.

2. Adding, subtracting, multiplying, and dividing numbers from one to one hundred forty-four inclusive—no multiplier or divisor greater than twelve required.

3. Simple relations of numbers from one to one hundred forty-four, inclusive.

4. Adding, subtracting, multiplying, and dividing numbers

from one to a thousand, inclusive—no multiplier or divisor greater than twelve required.

5. Second, minute; minute, hour; hour, day, week; week, year; day, year.

6. The writing of a few easy common fractions.

SPECIFIC DIRECTIONS.

1. State Primary Number Lessons, in the hands of pupils. Take to Lesson 100.

2. Reading and writing numbers to 1,000.

3. Many short examples in adding columns of units, the sum not to exceed 50. The object should be to have *every pupil* get the correct answer.

4. Short slate and blackboard exercises in addition, subtraction, multiplication and division, using only small numbers. Large numbers only confuse and fatigue young children.

5. Easy examples in adding or subtracting decimal fractions, limited to *tenths* and *hundredths*. Multiplying and dividing easy decimals by divisors less than 5.

MODELS.

.2	.5	.15	$1.25	.2×4 = .8
.3	.4	.20	2.75	.2×7 = 1.4
.4	.6	.12	4.50	.3×9 = 2.7
—	—	—	—	.2×5 = 1.
.9	1.5	.47	$8.50	

For further examples teachers are referred to "Methods of Teaching," pp. 211, 212, 213.

6. Pass around the class the following coins of the United States: the nickel, or five-cent piece, the dime, quarter-dollar, half-dollar, dollar, quarter-eagle, half-eagle, eagle.

7. Reading, writing, and adding dollars and cents. Multiplying dollars and cents by unit figures.

For model exercises, teachers are referred to "Methods of Teaching," p. 213.

8. Find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, of numbers not to exceed a maximum of 50.

9. Easy examples in adding such fractions as $\frac{1}{2}$ and $\frac{1}{4}$; 1-5 and 1-10; $\frac{1}{4}$ and $\frac{1}{8}$; also in adding columns of halves, thirds, fourths, fifths, eighths and tenths.

10. Oral drill in such examples as $\frac{2}{3}$ of 9; $\frac{3}{4}$ of 12; 2-5 of 15; 3-5 of 20, etc.

11. Drill in counting to 100, and then backward from 100, by 2's, 3's, 4's, 5's. Occasionally make a game of this by requiring every pupil that makes a mistake to be seated.

12. Counting by $\frac{1}{2}$'s to 20, and backward; counting by $\frac{1}{4}$'s; counting by 1-5's; by 1-10's.

13. Slate work: Multiplying by 2, 3, 4, 5, 6, 7, 8 and 9 such fractions as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{1}{8}$.

14. Exercises: Inch, foot, yard; pint, quart, gallon; day, week, month; dozen.

15. Easy examples in common and decimal fractions.

MODELS.

$\frac{1}{2} = .5$	$2\frac{1}{2} = 2.5$	$\$1\frac{1}{4} = 1.25$
$\frac{1}{2} = .5$	$3\frac{1}{2} = 3.5$	$\$1\frac{1}{2} = 1.50$
$\frac{1}{2} = .5$	$4\frac{1}{2} = 4.5$	$\$2\frac{1}{2} = 2.50$
$1\frac{1}{2} = 1.5$	$10\frac{1}{2} = 10.5$	$\$5\frac{1}{4} = 5.25$

For further examples for beginners see "Methods of Teaching," pp. 209 to 213.

16. For drill exercises in the four rules, see tables in Appendix.

17. In all the operations in this grade teachers will exercise their common-sense, and keep their work within reasonable limits. They will allow their pupils to learn how to make a beginning with small numbers and short examples.

GEOGRAPHY.

I. The best lesson that teachers can give to a class of beginners in geography in this city is to take the children to the top of the nearest hill and call their attention to whatever natural features of land and water are within the field of view. Then connect the knowledge acquired by actually *seeing* things with a picture or map.

II. Any teachers who will give this best of all lessons to their classes are hereby given permission to take their classes out for a half or a whole day for an observation lesson.

Specific Directions.

1. Teachers will make use of the first sixteen pages of the State Elementary Geography.

2. Give a few short lessons on the school globe to show the shape of the earth, the grand divisions, and the Atlantic and Pacific Oceans.

3. Exercises on Bancroft's Map of the Bay Counties.

4. Easy lessons in local geography, asking questions like the following:

(1). Have you ever seen a bay? If so, what one?
(2). Have you ever seen an island? What is it called?
(3). What mountain have you seen?
(4). Name all the hills you know of.
(5). Have you ever been to the top of Telegraph Hill? If so, what did you see from the summit?
(6). For further suggestions teachers are referred to Col. Parker's "How to Study Geography."

Observation Lessons.

I. "The first teaching a child wants is an object-lesson of one sort or another; and as soon as it is fit for systematic instruction it is fit for a modicum of science." —*Huxley.*

I. General Outlines.

3 Hours a Week.

1. Observation Lessons on Nature, on Plants, on Animals, and on the Human Body: (*a*) Air, wind; dew, frost;

the natural features of the vicinity; sunrise and sunset; the seasons. (*b*) Trees, shrubs, vegetables. (*c*) Grass-eaters; flesh-eaters; animals with hoofs, claws, wings; animals that live on the land; in the water; fly through the air. (*d*) Lessons on how we move, and why we take exercise; how and why we eat; what drinks we should avoid; the use of the blood; how we breathe and why we need pure air; why we should bathe; why we should keep regular hours, and why we should have plenty of sleep.

SPECIFIC DIRECTIONS.

I. Conversation Lessons on Animals.

ANIMALS: (1) Lion, tiger, camel, elephant. (2) Bees, butterflies, birds, ants. (3) Animals included in the First Grade reviewed.

Use the charts if there are any in school. Let your pupils make rough sketches of any animal they think they can draw.

II. ORAL INSTRUCTION LESSONS.

(1). PLANTS: Flower, leaf, stem, root, bud, fruit, seed. Examined and talked about. Rough sketches of leaves, stems, or flowers, on slate, blackboard, or practice paper. Let pupils bring the leaves, plants or flowers into the schoolroom.

(2). NATURAL PHENOMENA: Day and night; air, wind; fog and dew.

(3). COLOR: (1) Grouping flowers by colors, as scarlet, crimson, pink. (2) Grouping by contrast, as red, white, blue.

(4). PLACE AND DISTANCE: Pupils required actually to measure in inches and feet the length of blackboards, desks, tables, etc., in the school-room. Map of school-room to be drawn.

NOTE.—For further suggestions, teachers are referred to Partridge's "Quincy Methods," Calkin's "Object Lessons," Sheldon's Elementary Instruction.

HEALTH, MORALS AND POLITENESS.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics, and their effects upon the human system."

—*School Law of California.*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism, to teach them to avoid idleness, profanity, and falsehood, and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties and dignity of American citizenship." —*School Law of California.*

I. TRAINING IN POLITENESS.

I. TOPICS FOR SHORT TALKS: Take at least one short talk every week on Monday morning.

1. Manners at school.
2. Manners at home.
3. Manners on the street.
4. Manners at the table.
5. Manners toward the aged.
6. Manners in street-cars.

II. SPECIFIC DIRECTIONS.

1. Train children to be polite to their teachers and schoolmates.

2. Talk to them about being particularly respectful and polite at home to their fathers and mothers, brothers and sisters.

3. Talk to them about kindness to animals, such as dogs, cats, birds, and horses. Teach them that kindness to animals is only another form of politeness. Read to them extracts from "Black Beauty." Impress on the mind of every boy that his mother is, for him, the first lady in the land.

NOTE.—For suggestive exercises, teachers are referred to Dewey's "How to Teach Manners."

III. MORAL TRAINING.

Opening Exercise, Half Hour a Week.

I. Teachers are directed to give instruction for a few minutes in good manners and good morals at the opening of school in the morning and at other favorable opportunities. In giving this instruction, teachers should keep strictly within the bounds of manners and morals, and thus avoid all occasions for treating of or alluding to sectarian subjects.

II. Teachers will seek to plant in the minds and hearts of their pupils the principles of right living, especially of temperance; and thus, in spirit and in letter, to carry out the law that requires teachers to explain to their pupils the effects of the use of narcotics and alcoholic stimulants on body and mind.

IV. SPECIFIC DIRECTIONS.

1. Show boys why it is wrong to play truant.

2. Why it is wrong for them to fight.

3. Show children why they ought to tell the truth.

4. Caution boys against smoking cigarettes.

5. Read to your class the story of "Patsy," by Kate Douglas Higgin.

6. Lead children to avoid thoughtless cruelty to animals, such as dogs, cats, and horses; to insects, and to birds.

7. Lead them to consider kind treatment of animals one form of politeness.

8. Let every pupil commit to memory the following stanza:

> "He prayeth best who loveth best
> All things both great and small,
> For the great God who loveth us,
> He made and loveth all." —*Coleridge.*

9. The formation of a "Band of Mercy" has proved in many schools a most efficient means of moral training. The following is the pledge used in one school, signed by over 1,000 names:

"We, the undersigned, do solemnly promise that we will NOT FIGHT, and that we will do all in our power to prevent others from fighting.

"We do solemnly promise not to STONE CHINAMEN, and to try to prevent others from doing it.

"We do solemnly promise not to ABUSE ANIMALS, and to do all we can to protect them from the abuse of others."

V. Physical Training.

1. Free gymnastic drill.
2. Kindergarten motion songs.
3. Breathing exercises and vocal drill.
4. Care of the hands, face, teeth and hair.
5. Tidiness of dress.
6. Teach children to avoid drinking strong tea and strong coffee.
7. Teach them how to take care of their eyes.

THIRD GRADE.

General Directions.

"Teachers shall assign no lessons whatever for home study to pupils in the first, second and third grades."

—*Rules of the Board of Education.*

General Principles.

I. "The aim of all intellectual training for the mass of the people should be to cultivate common sense."

—*John Stuart Mill.*

II. "An educational course may be packed so full of work that one piece crushes out another; and then the pressure is an obstacle against which both teachers and taught beat until they are both painfully bruised."

—*Elliott.*

III. "Worth belongs to any subject of study if it conveys methods that are useful far beyond itself."

—*Bain.*

Reading, Writing, Language, and Spelling.

I. The real secret of having children learn to read, is to furnish them with an abundant supply of interesting matter to read.

II. When a child begins to read books from a love of them, he begins to educate himself.

I. General Outlines.

9 Hours a Week.

Oral and written expression, including writing, 5 hours. Reading 4 hours.

1. Oral and written exercises in the use of language as an expression of thought. Special attention to be given to correct forms of speech.—*Material:* (*a*) Elementary Science lessons. (*b*) Supplementary reading. (*c*) Pictures.—*Work:* (*a*) Oral reproduction of the reading lessons. (*b*) Oral and written reproduction of what has been read or told to the pupils, or silently read by them. (*c*) Reproduction of lessons in Elementary Science and Geography. (*d*) Studies of pictures; stories told and written from them. (*e*) Conversations on good manners and good morals. (*f*) Letter-writing. (*g*) The correct pronunciation and use of words frequently mispronounced and misused. (*h*) Vowels and consonants. (*i*) Uses of the apostrophe. (*j*) Syllabication. (*k*) Common abbreviations. (*l*) Quotations. (*m*) Frequent dictation exercises for spelling, punctuation, and forms used in letter-writing.

2. Writing: (*a*) Practice in the various movements of arm, hand, and fingers, with pen held correctly. (*b*) One writing-book completed each half-year, or its equivalent. (*c*) Copying from the blackboard. (*d*) Writing selections and dictated exercises in blankbooks.

3. READING: (*a*) From the authorized text-book. (*b*) From the permanent, or collateral supplementary books; and (*c*) from the circulating sets of supplementary books suitable for this grade. (*d*) A few choice selections of appropriate poetry are to be studied, committed to memory, and recited.

NOTE.—Teachers should keep in mind the great object both of oral and of silent reading; viz.: to understand and to acquire the thoughts and sentiments expressed in script or print. It is also the object of oral reading to express aloud or to communicate to others these thoughts and sentiments, in the words of the author. To do this with clearness and force demands of the reader a complete mastery of the words, distinct articulation, just emphasis, and right inflection. Frequent exercises to secure these essentials of good oral reading are especially desirable in the lower classes.

The supplementary reading, permanent and circulating, may be made of great educational value. Rightly used it will inform the mind, awaken thought, and improve expression; moreover, it will lead to the formation of good mental habits and to greater facility in reading. Every exercise in reading should be so conducted as to hold the close attention of all engaged in it.

II. SPECIFIC DIRECTIONS.

1. State Second Reader to Lesson 31. Two lessons a week. Teachers are instructed to carry out the suggestions in the "Preface." In addition, the teachers will take two exercises a week in sets of supplementary reading from the library.

2. Teachers are instructed to take all the written exercises required at the end of the reading lesson.

3. Train pupils to think about the meaning of what they read.

4. Occasionally take short lessons of one or two minutes in phonic drill to aid in securing distinct articulation.

5. Pay reasonable attention to diacritical marks, omitting some of the most difficult.

6. Poetry to be memorized by the class during the year:—
   1. Always Speak the Truth, p. 13.
   2. Suppose, p. 93.
   3. The Bluebird's Song, p. 174.

7. State Speller, in the hands of pupils, to Lesson 48. Spelling, partly oral and partly written.

8. Once in two weeks make up a spelling match by letting pupils choose sides. Dictate review words both from reader and speller.

9. Occasionally take a "spelling game." For a variety of such games see Methods of Teaching, pp. 134, 135, 136.

10. Occasionally have a concert drill in pronouncing columns of words from the speller to aid in securing distinct articulation and correct pronunciation.

11. Occasionally give a drill in concert phonic spelling from some lesson in the speller.

12. The following methods will be found useful, and will enable teachers to vary the monotony of routine lessons:
    (1.) Write the names of all the objects in the schoolroom.
    (2.) Let each pupil in turn name and spell orally the name of some article of food.
    (3.) Write a list of articles sold in a grocery store; a list of the names of flowers, fishes, birds, insects, trees, etc.

13. For books from which to select good lists of words for additional lessons, teachers are referred to Swinton's Word Primer.

14. Once a week ask your pupils to take home their Second Readers and read aloud to their parents the best lesson of the week, in order to show how well they can read.

15. In this grade teachers are expected to find out what kind of books their pupils are reading at home, and to recommend suitable books for them to read.

Teachers will tell their pupils how to draw books from the Free Library or the Mechanics' Institute Library or the Mercantile Library, and will give a list of at least five suitable books to be read.

16. The best way to teach children to read, after they are once started, is to get into their hands a good story book.

17. For further suggestions about methods in reading, teachers are referred to Methods of Teaching, pp. 189 to 195; pp. 123 to 131.

LANGUAGE LESSONS.

General Principles.

I. *Ideas* before words.
II. *Thought* before expression.
III. Practice before scientific rules.

I. GENERAL OUTLINES.

1. "Lessons in Language," State Series in hands of pupils, to Lesson 52. Teachers will carefully study the directions and suggestions in the preface of this book, and then carry them into practice.

2. Learning to distinguish Declarative, Interrogative, and Exclamatory sentences. Constructing sentences and distinguishing nouns, verbs and adjectives, and selecting such words from the reading lessons. Constructing sentences to express present, past and future time. Modifiers of verbs to tell *when, where* and *how*. Correct use of *an* and *a; this, that; these, those.* Correcting common blunders and errors in the use of *was, were; did, done; saw, seen; go, went,* etc. Analysis of simple sentences extending to the meaning of subject, predicate, object and adverbial modifiers, Once in two weeks, composition exercises consisting of letter-writing, abstracts of easy reading lessons, transposing easy poetry into prose, reports of oral lessons, and simple descriptions of objects.

II. Specific Directions.

1. Definition of a sentence.

2. Develop the idea and teach the definition of a *telling* sentence. (Declarative).

3. Lead pupils to arrive at a definition of an *asking* sentence (interrogative) and to learn the rule for closing such a sentence.

4. Same exercise with an exclamatory sentence.

5. Definition of a noun, and exercises in finding nouns in a reading lesson; making numerous lists of ten names of common objects.

6. Nouns that begin with a capital letter.

7. The words *I* and *O* should always be capitals—hunt for them in reading lessons.

8. Singular and plural forms of nouns. Lead pupils, by example, to find out the rule for forming plurals.

9. The possessive form of nouns in the singular number; of nouns in the plural. Hunt for examples in the reading lessons.

10. Use of quotation marks. Find illustrations in the reading lessons.

11. Contracted words; use of the apostrophe.

12. Use of the comma in a succession of particulars when *and* is omitted.

13. Forming the plural when the noun ends in *y* preceded by a consonant; preceded by a vowel.

14. Have pupils learn the use of a hyphen in a word divided at the end of a line; in compound words.

15. Forms of adjectives, as good, better, best.

16. Use of personal pronouns he, his, him, she, hers, her; it, its.

17. Find all the personal pronouns in some short reading lesson.

18. Find as many adjectives as you can in some lesson selected by the teacher.

19. Select all the verbs you can find in the reading lesson selected by your teacher.

20. Write a list of all the verbs you can think of.

21. For additional exercises in language, teachers are referred to "Swinton's Language Primer" and "Language Lessons" and "Methods of Teaching," pp. 279 to 287.

22. Once in two weeks give an exercise in letter-writing.

23. Once in two weeks an exercise in composition-writing. Teachers are referred for exercises to "Methods of Teaching," pp. 258 to 267.

ARITHMETIC.

I. The teacher must keep clearly in mind the two leading objects of the study of arithmetic; (1) for practical business in life; (2) for mental discipline in habits of attention, and in simple processes of reasoning.

II. More than any other elementary study, arithmetic enables the teacher to estimate the exact amount of work actually done by pupils.

III. Teachers must bear in mind that for many children arithmetic is a difficult study, especially at an early age. It is not wise to assume that pupils who are slow in learning arithmetic, are dull.

I. GENERAL OUTLINES.

4 1-2 Hours a Week.

Oral exercises with simple numbers, and arithmetic at sight, to precede, accompany and follow each subject in written arithmetic.

1. (*a*) Combinations of thousands, and of thousands with smaller numbers. (*b*) Writing and reading integers.

2. (*a*) Addition and subtraction in integers — sums and minuends not to exceed one million. (*b*) Multiplication and

division in integers—products and dividends not to exceed one hundred thousand.

3. (*a*) Simple concrete illustrations of fractions. (*b*) Relations of tenths, hundreths and thousandths to units and to one another. (*c*) Writing and reading decimals to and including thousandths. (*d*) The units of United States money, with their relation to one another. (*e*) Ten times, one hundred times, and one thousand time integers and decimals to and including thousandths; one-tenth, one-hundredth and one-thousandth of integers and of decimals—the result to contain no smaller decimals than thousandths.

4. (*a*) Addition and subtraction of decimals to and including thousandths; and (*b*) of United States money.

5. (*a*) The units of long, of liquid and of dry measure, with their relations. (*b*) Measuring distances and length, width and height or depth.

II. General Principles.

I. Train pupils to do their work slowly and accurately.

II. In this grade omit useless verbiage in explanations, definitions and analysis; keep down to business numbers.

III. Remember that a method or principle is most quickly perceived in working with small numbers.

IV. Some of your pupils will not remain in school after this year; try to fit them for simple business calculations.

V. Omit complicated problems and avoid long operations with large numbers.

III. Specific Directions.

1. State "Primary Number Lessons" to Lesson 69. Book in the hands of pupils. Teachers will carefully study the suggestions in the preface of the Text-book, and then carry them into practice.

2. The reading and writing of numbers to 100,000.

3. Drill in addition and subtraction; numbers used not

exceeding hundreds. Multiplication of numbers, the product not to exeeed 1,000. Division, using dividends not exceeding 10,000. Divisors not exceeding 10. Multiplication of small numbers by two figures.

4. Drill on tables.

5. Multiplication table to 10.

6. Adding and subtracting decimals not exceeding thousanths. Multiplying and dividing decimals and mixed numbers by whole numbers.

7. Slate and blackboard drill in adding dollars and cents; amount not to exceed $100. Fractions of cents to be written in business forms.

MODELS.

$\$\ 1.25$	$\$\ 8.16\frac{2}{3}$	$\$\ 1.06\frac{1}{4}$
$2.37\frac{1}{2}$	$5.33\frac{1}{3}$	$2.24\frac{3}{4}$
$4.87\frac{1}{2}$	$8.24\frac{2}{3}$	$5.17\frac{1}{2}$
$5.16\frac{1}{4}$	4.25	$2.87\frac{1}{2}$
$\$13.66\frac{1}{4}$	$\$25.99\frac{2}{3}$	$\$11.36$

8. Multiplying small numbers by fractions such as $\frac{3}{4}$, $\frac{2}{3}$, $\frac{5}{8}$.

MODELS.

(1.) $848 \times \frac{3}{4} = ?$	(2.) $2440 \times \frac{5}{8} = ?$
4)848	8)2440
212	305
3	5
636	1525

9. Call the class in line around the room and let pupils count by 2's, 3's, 4's and 5's to 100; then reverse the counting from 100 to 0. Any pupil that makes a miscount must be seated.

10. Same drill in counting by $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ and 1-5.

11. Same drill in adding and subtracting by 5.

12. Teach first the form of long division, using small dividends, and divisors less than 10. If pupils are capable of more work let them use a divisor not exceeding 50.

13. Train pupils to make up questions in mental arithmetic to be given to the class.

14. Short business examples such as might occur in buying things at a grocery store. Simplest form of a bill.

15. Exercises in making change.

16. Combine mental and written arithmetic. Lead pupils by easy questions from simple examples worked mentally to longer ones worked on the slate.

17. Tables to be learned:

    1. Long Measure.
    2. Avoirdupois Weight.

18. For aid in mental arithmetic teachers are referred to "Easy Problems for Young Thinkers," by Seymour Eaton.

GEOGRAPHY.

General Principles.

I. Lay some kind of a basis of conception by calling the attention of pupils to whatever natural features of land and water are within the limited field of their observation.

II. If possible take the whole class out to some hill-top near your school, and show them how to observe everything that can be seen.

III. The method of beginning with outlines and afterward filling in with details must to a certain extent be carried along with that of laying a foundation of correct notions based upon a knowledge of local geography.

I. GENERAL OUTLINES.

2 hours a week.

FIRST STAGE OF THE STUDY OF GEOGRAPHY.

1. The earth as a whole: Its shape, surface and general conditions, as studied with a school globe.

2. (*a*) Study of natural features by observation of real geographical forms: San Francisco and vicinity. (*b*) Drawing a plan of the school-room, school-house, and surroundings. (*c*) Use the compass; direction, distance, position. (*d*) Study of a map of San Francisco and vicinity; modeling forms and surfaces observed in the vicinity. (*e*) Study of a map of the State and section.

3. General study from globe and maps: (*a*) The hemispheres, continents, grand divisions, oceans and large islands; their relative position and size. (*b*) The grand divisions—position and climate (hot, cold, temperate); form, outline, surroundings; principal mountains, rivers, lakes; the most important countries, productions, people, cities; interesting facts and associations.

NOTE.—The class are to read books treating of geographical subjects, and are to make collections of specimens of the materials and products mentioned in the reading and characteristic of the countries and places studied. Oral reproduction of the lessons should follow.

II. SPECIFIC DIRECTIONS.

1. The teacher will give the class the exercises included in the first ten lessons of the State Elementary Geography.

2. Common-sense exercises in the local geography of San Francisco and vicinity. Direction of Market street, Montgomery street, California street. All the natural divisions of land and water that pupils can see with their own eyes.

3. Common-sense lessons from Bancroft's Maps of the Coast Counties.

4. Use the school globe. Ask questions like the following, sending each pupil in turn to the globe:

I.

1. Point out with your finger the parts that represent land; water.

2. Which is the larger, the land surface or the water-surface?

3. Turn the globe round once: on what does it turn?

4. In what time does the real earth turn round or *rotate once?* On what does it turn?

5. Find the most northerly point of the globe.

6. Place your finger on the most southerly point.

7. Put your finger on the black line half-way between the two poles and follow it around the globe; what is it called?

8. Find the Pacific Ocean; the Atlantic Ocean.

9. Find the Indian Ocean.

10. Point out North America; South America.

11. Find Europe, Asia, Africa.

12. Turn the Eastern Hemisphere toward the class; the Western.

13. Which is the larger?

14. Find five islands and tell their names.

II.

1. In what direction is the North Pole from the South Pole? The Equator from the North Pole?

2. Europe from Africa? Africa from Europe?

3. Europe from South America? etc.

4. Which is the larger, North America or Europe? etc.

5. Find the place where North America and Asia nearly come together. What separates them?

6. What ocean around the North Pole?

Observation Lessons.

1. Name the months in which it rains in this city and State.

2. Name the months in which it seldom rains.

3. In what season do we have the longest days? In what month? When the shortest days?

4. When is the weather hottest? Coldest?

5. During the short days in summer where does the sun rise? Point towards the place.

6. In the longest days in summer where does the sun set? Point.

7. About what time does the sun rise and set in the longest days? The shortest days?

8. How many hours does the sun shine during the longest days? The shortest?

9. At noon, where do you see the sun in the long days of summer? In the short days in winter?

10. When does the sun shine the hottest, at morning, noon or evening? Why?

11. For additional questions in this direction, teachers who have a copy of "Methods of Teaching" are referred to pages 244 to 246.

12. For further suggestions teachers are referred to Col. Parker's "How to Study Geography," pp. 141, 142.

ELEMENTARY SCIENCE.

1 1-2 hours a week.

General Principles.

I. The main purpose of elementary lessons in natural science is, not to crowd the memory with facts and names, but to train pupils to *observe*, and to *tell* what they are able to find out about things.

II. "*Observation* is the absolute basis of all knowledge. The first object, then, in education, must be to lead a child to *observe* with accuracy; the second, to express with correctness the result of his observation." —*Pestalazzi.*

III. Begin with things that most of your pupils know something about, adhering strictly to the principles of examining real objects whenever possible, and when not, of using pictures.

1. Lessons on the HUMAN BODY, with special reference to HYGIENE:

(*a*) The head, trunk and extremities. (*b*) How to train the body so as to make and keep it healthful, strong and graceful. (*c*) Simple study of the special senses; their use and abuse.

NOTE 1.—Each year of the Grammar-School course of study teachers must give to their pupils instruction upon proper food and clothing, suitable exercise and rest, pure air, sufficient light, and temperance in eating and drinking. The attention of teachers is especially called to the requirements of the following law of this State: Sec. 1665. "Instruction must be given in the * * elements of physiology and hygiene with special instruction as to the nature of alcoholic drinks and narcotics, and their effects upon the human system."

2. Observation lessons, as far as the time assigned will allow, on:

(*a*) PLANTS, *September to January:* Common seed-vessels (lupine, berries); fruits (apple, grape); vegetables (squash, carrot); grains (wheat, corn).—*January to April:* Common trees (oak, pine); shrubs (arbor, vitæ); stems (horse-chestnut, bamboo); woods (pine, oak, redwood).—*April to June:* Growth of seedlings (beans, peas, morning-glory); buds, leaves, flowers, roots—their shape, parts, uses, and relations to the life of the plant.—Class collection of grains, woods, pressed leaves and wild flowers. Specimens mounted, labeled, and arranged; woods cut in regular shapes, with one polished surface.

NOTE 2.—Other familiar and available specimens may be substituted for those mentioned in any department of Elementary Science.

NOTE 3.—The study of plant life should be carried on in connection with window-gardening or a school-garden.

(*b*) MINERALS: Common rocks, such as granite, basalt, sandstone, marble: Their relation to each other; their composition, history, and uses.

(*c*) PHENOMENA OF NATURE: Air, wind, moisture, rain, steam, frost, hail, snow, ice.

OBSERVATION LESSONS.

1. OBJECTS:—Bread, butter, coffee, tea, etc.

2. FORM:—Plain figures, lines and angles. Exercises in measuring inch, foot, yard.

3. Review of primary and secondary colors.

4. ANIMALS:—Some study of insects from specimens in hands of pupils—house-fly, butterfly, ant, shrimp and crab. Use small magnifying glasses if the children can get them.

PLANTS: Ask your pupils to plant at home in the garden or in a box, a bean, a pea, a grain of corn, and a grain of wheat. Tell them to watch the growth and write something about it. The teacher also will plant a few beans or peas, and a few grains of corn at school, and show the growth of the seed before it comes up out of the earth.

5. BOTANY: Teach the names of five California wild flowers, and bring specimens into the hands of pupils. Also at least five garden flowers. Kinds of trees that grow in San Francisco and vicinity. Study of specimens of woods.

SYLLABUS FOR GENERAL LESSONS.

1. Parts of a plant—roots, stem, leaves.

2. Use of each part.

3. Uses of plants: (1) Food. (2) Medicine. (3) Clothing. (4) Shade. (5) Beauty. (6) Shelter. (7) Lumber.

4. Name plants, illustrating each use.

5. Name all the kinds of trees you can think of.

6. Indirect care of shade trees. (1) Do not cut or break. (2) Do not hitch horses near. (3) Do not kill birds. Why?

7. Parts of a flower. Learned with the flower in hand.

NOTE.—For suggestive exercises, teachers are referred to Partridge's "Quincy Methods."

HEALTH, MORALS AND POLITENESS.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism; to teach them to avoid idleness, profanity and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties, and dignity of American citizenship."

—*School Law of California.*

I.—PHYSICAL TRAINING.

Time, 1 1-2 hours a week.

NOTE.—In giving the general lessons specified in the following outlines, teachers are referred to the "Primer of Physiology and Hygiene," by Wm. T. Smith.

1. Lessons on the HUMAN BODY, with special reference to HYGIENE:

(*a*) The trunk, head and extremities. (*b*) How to train the body so as to make and keep it healthful, strong, and graceful. (*c*) Simple study of special senses; their use and abuse.

NOTE 1.—Each year teachers must give to their pupils instruction upon proper food and clothing, suitable exercise and rest, pure air, sufficient light, and temperance in eating and drinking. The attention of teachers is especially called to the requirements of the following law of this State:

"Sec. 1665. Instruction must be given in the elements of physiology and hygiene with special instruction as to the nature of alcoholic drinks and narcotics, and their effects upon the human system."

II.—TRAINING IN POLITENESS.

Children are supposed to learn manners at home and to take them on unconsciously from intercourse with others. So they do to a certain extent; but it is exceedingly desirable that, superadded to this unconscious influence, good manners should be made the subject of definite instruction in each grade of every school.

I. TOPICS FOR SHORT TALKS.

1. Manners at home.
2. Manners in school.
3. Manners in society.
4. Manners at places of amusement.

II. TOPICS FOR SHORT TALKS.

1. Always be polite to your parents. Why?
2. Always obey your parents cheerfully. Why?
3. Do all your duties cheerfully. Why?
4. An ungrateful child is always despised by everybody. Why?
5. Duties at school.

III. MINOR RULES OF POLITENESS.

NOTE.—Teachers will read these rules to pupils, discuss them in class, and then require them to be copied:

1. Do not fail to say "Good morning, Miss ——," to your teacher, and "Good evening, Miss ——," when you leave her.

2. When you pass directly in front of your teacher, say, "Excuse me."

3. Never fail to say "Thank you," (not "Thanks,") for the smallest favors.

4. When a schoolmate is reading, or is answering a question, do not raise your hand to correct a mistake until after he has finished.

5. When you pass directly in front of a school mate, say "Excuse me."

6. Do not stare at visitors who enter the school-room.

7. When you stand to recite, stand erect, like a little well-bred gentleman or lady.

8. In handing a pointer, pen, or pencil, hand the blunt end towards the person to whom you wish to pass it.

9. It is impolite to chew gum in school.

10. It is not good manners to eat candy in school.

NOTE.—The preceding rules are adapted from Miss Dewey's "How to teach Manners," a book that should find a place on every teacher's desk.

III. MORAL TRAINING.

Opening Exercise, 1-2 hour a week.

1. Teachers are directed to give instruction for a few minutes in good morals at the opening of school in the morning and at other favorable opportunities. In giving this instruction, teachers should keep strictly within the bounds of manners and morals, and thus avoid all occasion for treating of or alluding to sectarian subjects.

I. OUTLINES OF LESSONS.

1. KINDNESS TO OTHERS—(1) to parents; (2) to the aged and infirm; (3) to the unfortunate and erring; (4) to enemies;—the Golden Rule.

2. KINDNESS TO ANIMALS—(1) to those that serve us; (2) to those that do not harm us—the killing of birds; (3) the killing of those that do us harm; (4) cruelty to any animal wrong.

3. LOVE—(1) for parents and friends; (2) for one's neighbor; (3) for enemies.

4. RESPECT AND REVERENCE—(1) for parents; (2) for the aged; (3) for those in authority.

5. OBEDIENCE—(1) to parents; (2) to teachers; (3) to those in authority; (4) to conscience.

6. PUNCTUALITY — (Blackboard Lesson). (1) it saves trouble; (2) it saves time; (3) it prevents duties from being forgotten; (4) it forms a good habit.

HISTORY AND PATRIOTISM.

1. Reading short sketches of the lives of persons famous in American history, such as Washington, Franklin, Jefferson, Lincoln, Grant, Webster, etc.

2. The reading of stories from American history.

3. Visits to historic places and monuments in and about San Francisco.

4. The books used for reading may be permanent or circulating supplementary books or leaflets, and the time spent in reading should be a part of that given to supplementary reading.

5. For a hand-book from which good short extracts may be read to the class, teachers are referred to Swinton's "Primary History of the United States."

FOURTH GRADE.

General Principles.

I. Bear in mind that many boys and girls in your class will not attend school after this year. Take the essentials of the grade work, but find time to teach them the main things they ought to know, in the grade or out of it. Every intelligent teacher is allowed some scope for the exercise of common sense.

II. The essential things that pupils ought to be trained to do well are: (1) To read, write and spell their mother-tongue correctly as far as they use it in everyday life. (2) To work accurately short examples in the "four rules;" to work short business examples in common and decimal fractions; to reckon simple interest on small sums of money; to make out bills, to write out a receipt, and to write a letter. (3) To know something of geography. (4) To know something of the rules of polite behavior, and of the precepts of morality.

General Directions.

1. "The lessons assigned for home study to pupils in the fourth and fifth grades shall be such as to require not more than one hour's study, and in these grades no lessons whatever in arithmetic shall be assigned for home work."

2. Read carefully the Course of Study for the Third Grade in order to understand how the directions are connected with those of your own grade.

3. Study attentively the Course for the Fifth Grade to know how your own work ought to connect with that.

Reading, Writing, Language and Spelling.

I. "Reading is the key that unlocks for the child the whole world's stock of knowledge."

I. General Outlines.

10 hours a week.

Oral and Written Expression, including Writing, 5 hours.

Reading, 4 hours.

1. Oral and Written Exercises in the use of language as an expression of thought. Special attention to be given to correct forms of speech.—*Material:* (*a*) Elementary Science lessons. (*b*) Supplementary reading. (*c*) Pictures.—Work: (*a*) Oral reproduction of the reading lessons. (*b*) Oral and written reproduction of what has been read or told to the pupils, or silently read by them. (*c*) Reproduction of lessons in Elementary Science and Geography. (*d*) Studies of pictures; stories told and written from them. (*e*) Conversations on good manners and good morals. (*f*) Letter-writing. (*g*) The cor-

rect pronunciation and use of words frequently mispronounced and misused. (*h*) Uses of the apostrophe. (*i*) Syllabication. (*j*) Abbreviations. (*k*) Quotations. (*l*) Frequent dictation exercises for spelling, punctuation, and forms used in letter-writing. (*m*) Spelling the plural of nouns. (*n*) Compound words.

2. WRITING: (*a*) Practice in free movements. (*b*) One writing-book completed each half-year, or its equivalent. (*c*) Copying from the blackboard. (*d*) Writing, in blank-books, selections and original and dictated exercises.

3. READING: (*a*) From the authorized text-book; (*b*) from the permanent, or collateral, supplementary books; and (*c*) from the circulating sets of supplementary books suitable for this grade. (*d*) A few choice poems or selections from longer poems are to be studied, committed to memory, and recited.

4. Although the great aim of reading should be the comprehension and acquisition of the author's thoughts and sentiments, yet the mechanical part of oral reading should not be neglected. Judicious exercise of the organs of speech for two or three minutes each day, in order to give them more flexibility and greater precision in their action, will avail much.

In selecting poetry to be committed to memory, it should be kept in mind that the object of the exercise is not merely to cultivate the verbal memory—important as that is—but also to lead to the appreciation of the beauty of thought and expression, and to leave in the mind and heart sentiments that will enrich the life.

SPECIFIC DIRECTIONS.

1. State Second Reader to Lesson 71. Two lessons a week. Teachers will read the preface and carry into effect the directions there given.

2. Reading at sight, two lessons a week, from sets of Supplementary Readers; from "Black Beauty," and from other selected matter.

3. Teachers are instructed to find out what kind of books their pupils are reading at home, and to suggest suitable books to be read. They will tell them how to choose books from the Free Library, and other libraries, and will give their pupils a list of half a dozen books to be read. The best way to cultivate a taste for reading is to get a good book into the hands of the child.

4. Take the State Speller to Lesson 51. Book in the hands of pupils. Combine written with oral spelling.

5. Supplement the work in the State Speller by selected groups of words in common use, often misspelled; by words from reading lessons; by "spelling games," and any other variations to relieve the monotony of work on the State Speller.

6. For a variety of word exercises, teachers are referred to Swinton's Work Book; "Methods of Teaching," pp. 132 to 136; "Quincy Methods."

7. *Special Suggestion.*—If you wish to have your pupils make rapid progress in reading, ask them, once a week, to read aloud to their parents or their older brothers or sisters.

LANGUAGE LESSONS.

General Principles.

I. One of the best ways in which children acquire a knowledge of language is by reading interesting books.

II. In this grade teachers should begin to find out what kind of books their pupils are reading at home, and advise them what to read by giving them a short list of the very best instructive story books.

SPECIFIC DIRECTIONS.

1. State "Lessons in Language" in the hands of pupils.

2. Carefully observe the directions and suggestions given in the "preface" of the text-book.

3. Once in two weeks take an exercise in letter-writing.

4. *Language.*—Naming parts of speech from reading

lessons. Declension of personal pronouns; number and case of nouns; comparisons of adjectives, and conjugation of the verb *to be* in the indicative mood.

Analysis of simple sentences; subject; predicate, modifiers of subject; modifiers of predicate.

4. For additional exercises, teachers are referred to Swinton's "Language Primer" and "Language Lessons."

5. For exercises in composition-writing, teachers are referred to "Methods of Teaching," pp 258 to 278.

ARITHMETIC.

General Principles.

I. In teaching arithmetic in this grade teachers must use simple, sensible and thorough methods.

II. The main things upon which the attention of pupils must be concentrated are: (1) Readiness and accuracy in the ' four rules," limited to short computations with small numbers; (2) business examples involving common and decimal fractions; (3) the common business tables of weights and measures; the ability to reckon simple interest on small sums of money for one year at six per cent., and for 30, 60 or 90 days; (4) to write a promissory note, a receipt, and a bill.

III. In parts of this work teachers must be content with a beginning, without attempting to exhaust the subject by long logical demonstrations or complete forms of analysis. Your pupils in this grade have no time to spend fooling over complicated arithmetical puzzles.

I. GENERAL OUTLINES.

4 1-2 hours a week.

Oral exercises with simple numbers, and arithmetic at sight, to precede, accompany and follow each subject in written arithmetic.

1. Addition and subtraction of integers, of decimals, and of United States money, continued.

2. (*a*) Multiplication and division of integers, continued. (*b*) Multiplication and division of decimals to and including thousandths, and of United States money, continued.

3. (*a*) The tables of Square Measure, of Avoirdupois Weight, and of Time. (*b*) Measuring the dimensions and finding the areas of squares and other rectangles.

4. Operations in common fractions generally limited to small fractions, such as halves, thirds, fourths, fifths, sixths, sevenths, eighths, ninths and twelfths. Long and complicated questions in the Text Book omitted.

Particular attention to be given to the analysis of operations. Mental Arithmetic in connection with written, the same topic in both kinds being taught at the same time.

II. Specific Directions.

1. State "Lessons in Numbers," in the hands of pupils, completed.

2. Give your pupils business examples which will give elementary ideas of trade and household economy.

3. Train pupils to make up questions in mental arithmetic to be given to one another.

4. Call pupils in line around the room and conduct drill lessons in adding and subtracting by 2's, 3's, 4's, 5's, etc.; by $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$; by the decimals, .2, .4, .5, etc.; by $1\frac{1}{2}$, $2\frac{1}{2}$, etc. Pupils that fail to be seated.

5. Train pupils to habits of thought, reason, and judgment in solving problems, and in giving short, exact, common-sense explanations.

6. Improbable examples, such as never occur in business, and fractional expressions of large and unusual terms which require much time and wear of brain to handle, are not profitable work for children. In ordinary business nearly all the fractions except decimals, used in business, are *halves, quarters, eighths, thirds, sixths and twelfths.* Business operations except in interest, rarely require decimals exceeding *hundredths.*

7. Instead of teaching the tables by merely requiring pupils to memorize and recite them, put the *real measures* of every kind before them, until hand and eye are familiar with their use. Train your pupils in actual measurements in long, square and cubic measure; borrow from some grocery store the ounce, half-ounce and pound weights, the pint and quart measures, and experiment with them until your pupils know the reality as well as the words and numbers.

Tables to be taught: (1) Long Measure; (2) Avoirdupois Weight; (3) Time; (4) Cubic inch and cubic foot.

For methods of handling tables, teachers are referred to "Methods of Teaching," pp. 227 to 230.

8. For suitable questions in mental arithmetic, teachers are referred to "Easy Lessons for Young Beginners," by Seymour Eaton, and to "Colburn's Mental Arithmetic."

9. Require each pupil in turn to make up and give to the class some short question in mental arithmetic.

10. Occasionally match one class or one division with another, by submitting five short business questions to be worked in a given time on slates.

11. Drill-work on fractions limited mainly to such fractions as are used in business, namely: halves, quarters, eighths, thirds, sixths, twelfths. Turn to the detailed directions in the Third Grade Course, and continue work in the same line.

12. Drill on decimals, addition, subtraction, multiplication and division—limited to small numbers. For illustration of method, teachers are referred to "Methods of Teaching," pp. 209 to 227.

GEOGRAPHY.

I. Teachers will require only essentials to be memorized for recitation. The greater part of the text-book must be read aloud in class, and talked about.

I. General Outlines.

2 hours a week.

FIRST STAGE OF THE STUDY OF GEOGRAPHY, CONTINUED AND COMPLETED.

1. (*a.*) Study of our own country from the map. (*b.*) General study of its different sections from maps of sections. (*c.*) Imaginary travels in it; oral or written descriptions of these. (*d.*) Class collection and mounting of specimens of the industries of our country.

2. Simple study of the *important countries* in each grand division: The position of the country in the grand division; its natural features, climate, productions; its noted localities, cities, *etc.*

3. Trade and commerce; ocean routes.

Note.—The class are to read books treating of geographical subjects, and are to make collections of specimens of the products mentioned in the reading and characteristic of the countries and places studied. Oral reproduction of the lessons should follow.

II. Specific Directions.

1. State Elementary Geography in the hands of pupils. Take the first 27 pages and the following pages, 62, 63, 64, 65, 69, 70, 71, 76, 77, 80, 81, 84, to be read and recited with open book.

Only the leading statements are to be memorized, as pages 62 to 66; pages 76, 77, 78.

Teachers will carefully read the preface to this text-book, headed, " Methods of Awakening Interest," and then carry out the suggestions.

The method of beginning with outlines and afterwards filling in with details must, to a certain extent, be carried on *pari passu* with that of laying a foundation of correct notions based upon a knowledge of local geography. The extent of local lessons, however, is limited; and beyond the limit of personal observation by pupils, it seems to be the better plan to begin with the grand outlines.

Unless children have traveled a great deal, they can no more form any correct idea of the size of California than they can of the United States, or Africa, or Asia. A great deal of elementary work necessarily consists in getting familiar with maps and names. It must, moreover, be borne in mind, that generalizations, in order to be of any value, must be based on a knowledge of particulars.

2. Take three or four review exercises on Bancroft's Maps of the Bay Counties.

3. Pupils to draw on blackboards and slates a rough outline map: (1.) Of the Bay Counties from Bancroft's Map; (2.) Of California from the open book.

4. Short Lessons on the school globe. For suggestive questions and exercises see "Methods of Teaching," pp.235 to 239.

5. Exercises in pointing out continents, oceans, grand divisions on outline maps.

6. In using the book, let the advance lesson be read aloud in the class. Direct pupils to mark with a pencil a few things to be memorized.

7. Let the map questions be read aloud in class and answered with open map in the hands of pupils; then mark a few leading questions and require the class to recite them from memory at the next lesson.

8. Do not expect your pupils to know more of a lesson than the teacher can remember without looking at a text-book.

9. Having determined the chief things to be learned, fix them in the memory by repeated review questions.

10. Use the outline maps.

11. Blackboard drawing in the rough is better than labored drawings with pen or pencil.

12. Relieve the monotony of daily lessons by exercises intended to stimulate curiosity. Show to pupils pictures from

illustrated magazines or papers of cities, of beautiful scenery, or of great natural curiosities.

Take an occasional lesson on the school globe. For suggestive questions see Methods of Teaching, pp. 233 to 239.

13. Geography-games or matches.

Directions.—Every pupil that fails to give a name, or that repeats a name given before, must be seated.

1. Name a city in California.
2. Name a city anywhere on the globe and tell in what country it is.
3. Name any State of the United States.
4. Name some useful vegetable production, and tell in what part of the world it grows.
5. Name some cabinet curiosity and tell where it came from.
7. For further exercises teachers are referred to Methods of Teaching, pp. 161, 162, 163.

14. For further suggestions teachers are referred to Col. Parker's "How to Teach Geography," pp. 143 to 148.

I. ELEMENTARY SCIENCE.

General Statements.

1. The purpose and method of the grammar grade work in elementary science is largely coincident with the purpose and method of the observation lessons in the primary grades. The purpose is to train the senses and the intellectual faculties in their natural order of development; to form scientific habits of study, and to acquire such knowledge as will incite to further and more systematic study of the natural sciences; to build up the moral nature; and to lay the foundation of a well-rounded and practical education. The method from first to last is observation, experiment and induction, with some form of expression—oral, graphic or constructive—which shall complete and communicate the results of the work.

2. The right study of elementary science, at every stage of its process, trains the mind by exercising the faculties of analysis, comparison, judgment and taste, as well as the other mental activities. This study should nourish the moral nature by creating a habit of sympathy and communion with nature; by arousing a love for beauty and symmetry of form, and by revealing the design and adaption of structure in plant and animal life; by instilling a tenderness for lower forms and reverence for higher forms of being; by leading to a recognition of responsibility to law as manifested in natural phenomena, and of the power of habit as displayed in the structural growth of plant and animal life; by applying the laws of physical growth to mental and moral growth; by fostering an appreciation of the mutual helpfulness of all departments of nature and an apprehension of the providence and fatherhood of the Creator as shown in the life of nature.

II. Specific Directions.

I. Begin with things that most of your pupils already know something about; adhering strictly to the principle of examining real objects when they are procurable; and, when not, of using pictures. Agassiz, having been asked to give some instruction on insects at a teacher's institute, says: "I thought the best way to proceed would be to place the objects in the hands of the teachers, for I knew that mere verbal instruction would not be transformed into actual knowledge. I therefore went out and collected several hundred grasshoppers, brought them in, and gave one into the hands of every one present. It created universal laughter; yet the examination of these objects had not been carried on long before every one was interested, and, instead of looking at me, looked at the thing. And they began to examine, and to appreciate what it was to see, and see carefully. At first I pointed out the things which no one could see. 'We can't see them,' they said. 'But look again,' said I, 'for I can see things ten times smaller than these;' and they finally discerned them."

II. What is seen is easily remembered, but what is only told goes in at one ear and out at the other.

III. Do not be over-scientific. Avoid technical terms when common names will serve your purpose. What we want here is simple truth; not pretentious science buried under classical nomenclature.

I. ELEMENTARY SCIENCE.

1 1-2 Hours a Week.

1. Lessons on the HUMAN BODY, with special reference to HYGIENE: (*a*) The bones as a framework and protection. (*b*) Their composition and structure. (*c*) Joints, ligaments and cartilages. (*d*) The growth and health of bones; injury to and repair of bones, joints and ligaments. (*e*) How exercise, rest, posture, clothing, food, alcoholic and other stimulants affect directly or indirectly the bones.

2. Observation lessons, as far as the time assigned will allow, on:

(*a*) ANIMALS: Structure and habits of familiar insects and vertebrates (crab, spider, fly, butterfly, grasshopper; frog, fish, hen, cat, dog, pig, rabbit, horse, cow); with special reference to the relation of structure to conditions and modes of life.—Kindness to animals: anecdotes and stories read and told.—Class collection of insects and of animal products (wood, silk, fur, feathers, hide, bone, horn, ivory, nests, eggs, marine or land shells, sponge, coral).—Written reproduction of lessons on specimens.

(*b*) PHENOMENA OF NATURE: Hills, valleys, rivers, lakes, seas.—Drainage and land-sculpture, with general notions of land-building and of the formation of the earth's crust.—Heat, cold, water, frost and ice, as forces of nature.

II. SPECIFIC DIRECTIONS.

1. Make use of Smith's Primer of Physology.

2. For suggestive methods of conducting exercises, teachers are referred to "Quincy's Methods."

HEALTH, MORALS, AND POLITENESS.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California.*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice, and patriotism; to teach them to avoid idleness, profanity, and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties and dignity of American citizenship."

—*School Law of California.*

I. HISTORY AND PATRIOTISM.

Time 1 1-2 hours a week.

1. The reading of short sketches of the lives of persons famous in American history, such as Washington, Franklin, John Adams, Jefferson, Lincoln, Grant, Webster, Sherman, etc. The sketches should include striking anecdotes and prominent events, not dry outlines of dates.

2. The reading of stories from American history.

3. The reading of short sketches of American inventors, such as Fulton, Whitney, Howe, Morse, and Edison.

4. Visits to historic places and monuments in and about San Francisco.

5. Teachers will read to their classes the following patriotic poems:

   I. Paul Revere's Ride.
   II. Sheridan's Ride.
   III. Grandmother's Story of the Battle of Bunker Hill.

6. The books used for reading may be permanent or circulating supplementary books, or leaflets, and the time spent in

reading should be a part of that given to supplementary reading.

7. For a handbook from which good, short extracts may be made, teachers are referred to "Swinton's Primary History," and "Eggleston's History of the United States."

8. For suggestive exercises, teachers are referred to Partridge's "Quincy Methods."

II. TRAINING IN POLITENESS.

"A beautiful behavior is the finest of fine arts."

—*Ralph Waldo Emerson.*

TOPICS FOR SHORT TALKS.

Teachers must prepare themselves to give special instructions at stated times to their pupils on the following topics:

I. MANNERS.

1. Manners in society.
2. Manners at home.
3. Manners at the table.
4. Respect to the aged.
5. The general rules of politeness.
6. For additional topics refer to those in the third grade, and take them up more fully than they could be treated in that grade.

II. COURTESY.

Short talks in the class about the following precepts:

1. When you do a favor, do it cheerfully. Why?
2. It is not discourteous to refuse to do wrong. Why?
3. A cheerful countenance is always welcome.
4. In conversation avoid blunt contradictions.
5. When you have slighted or wronged any one do not be afraid to apologize.

III. FIVE RULES TO BE MEMORIZED.

1. Be as polite to your mother as you would to a queen.

2. True politeness consists in a kind regard for the feelings and rights of others.

3. Look persons in the eye when they speak to you, or when you address them.

4. Be as polite to your brothers, sisters and schoolmates as you are to strangers.

5. Whispering or laughing at lectures or places of amusement is both rude and vulgar.

6. Every boy should bear in mind that, for him his mother is the highest lady in the land.

IV. MORAL TRAINING.

1. "The vital part of human culture is not that which makes man what he is intellectually, but that which makes him what he is in heart, life and character."

—*William Russell.*

2. Teachers are directed to give instruction in morals and good manners at the opening of school on Monday morning of each week, taking from 15 to 30 minutes for such lessons. In giving such instruction, teachers should keep strictly within the bounds of manners and morals, and thus avoid all occasion for treating of or alluding to sectarian subjects.

V. SHORT TALKS ON MAXIMS.

1. INDUSTRY.

1. A young man idle is an old man needy.
2. Idleness is the mother of vice.

2. ECONOMY.

1. Spend less than you earn.
2. Do not spend your money in buying useless things.
3. Be saving but not stingy.

3. ORDER.

1. Put everything in its right place.
2. Keep appointments punctually.
3. Have a regular time for home study.
4. Try not to be tardy.

4. TOPICS.

I. TRUTHFULNESS—(1) in thought, word and act; (2) deceit and falsehood; (3) keeping one's word.

II. COURAGE—(1) true and false; (2) dare to do right; (3) courage in duty.

III. HONESTY—(1) in word and deed; (2) in little things; (3) dishonesty.

IV. HONOR—(1) one's parents; (2) one's self; (3) home and country.

V. GOOD NAME—(1) when young; (2) keeping it; (3) reputation and character; (4) keeping good company.

VI. SELF-CONTROL—(1) control of temper; (2) anger, when right; (3) wrong desires.

VII. CONFESSION OF WRONG—(1) when manly and noble; (2) denial of faults.

5. SCHOOL DUTIES OF PUPILS.

I. Duties towards teachers. Question your pupils to find out what their ideas of school duties are. At the close of your conversation sum up your statements into directions somewhat like the following, and have pupils copy them into their blank-books:

1. Be orderly and quiet.
2. Be punctual and diligent.
3. Try to form good habits.
4. Be respectful and polite to your teacher.
5. Learn your lessons as well as you can.

6. You must study your lessons *for your own good;* not because your teacher *tells* you to study them.
7. You cheat *yourself,* not your teacher, when you are idle and neglect your lessons.

6. TALKS ON HOME DUTIES OF CHILDREN.

Stories.—Have short extracts read from "Little Lord Fauntleroy," "Cowdery's Moral Lessons," and other suitable books.

FIFTH GRADE.

General Directions.

I. "The lessons assigned for home study to pupils in the fourth and fifth grades shall be such as to require not more than one hour's study; and, in these grades, no lessons whatever for home study shall be assigned in arithmetic."

—*Rules of the Board of Education.*

READING, WRITING AND LANGUAGE.

9 Hours a Week.

I. GENERAL OUTLINES.

Oral and Writing Expression, including Writing, 5 hours.	Reading, 4 hours.

1. ORAL AND WRITTEN EXERCISES in the use of language as an expression of thought. Special attention to be given to correct forms of speech.—*Material:* (*a*) Elementary Science lessons. (*b*) Supplementary reading. (*c*) Pictures.—WORK: (*a*) Oral reproduction of the reading lessons. (*b*) Oral and written reproduction of what has been read or told to the pupils, or silently read by them. (*c*) Reproduction of lessons in Elementary Science and Geography. (*d*) Studies of pictures; stories told and written from them. (*e*) Conversations on good man-

ners and good morals. (*f*) Letter-writing. (*g*) The correct pronunciation and use of words frequently mispronounced and misused. (*h*) Use of the dictionary for definitions and pronunciations. (*i*) Dictation exercises. (*j*) Some of the changes in the forms of nouns (inflection), and the purpose of such change (*e. g.*, tooth, teeth; lady, lady's; ladies, ladies'). (*k*) Compound words. (*l*) A few roots, prefixes and suffixes.

2. Writing: (*a*) Practice in free movements. (*b*) One writing book completed each half-year, or its equivalent. (*c*) Copying from the blackboard. (*d*) Writing, in blank books, original and dictated exercises, poetry from memory and choice extracts.

3. Reading (*a*) From the authorized text-book; (*b*) from the permanent, or collateral, supplementary book; (*c*) from the circulating sets of supplementary books suitable for the grade. (*d*) Choice poems or selections from longer poems are to be studied, committed to memory, and recited.

Note.—Read the notes under Grades III and IV. Work in the directions there indicated. The pupils are now able to understand and apply the essential principles of emphasis and inflection. Silent reading for the purpose of testing and increasing the ability to gather thoughts from the printed page will be found a valuable exercise. It will reveal the workings of the pupils' minds, and will prepare the way for a more useful study of text-books. The reading may sometimes be from a single book passed from pupil to pupil, all but the reader being listeners. Good listening helps to good reading, and emphasizes its importance.

Writing from memory poems that have been carefully studied, will give the mind a firmer hold on them, and will prove in other ways a useful exercise.

II. Specific Directions.

1. Second Reader completed. Supplementary reading from the school library.

2. Let the class memorize the following selections of poetry:

1.	Lament of Mother Robin.	Lesson 74.
2.	The Fairy Artist.	" 87.
3.	Beautiful Things.	" 98.
4.	Buttercups and Daisies.	" 102.

3. Give your pupils short lists of books suitable for them to draw from the Free Library or other libraries.

4. State Speller. Lessons 50 to 101.

5. Supplement the work in the Speller by suitable words selected from the Reader; by groups of words often misspelled, and by any other devices to awaken interest, such as spelling-matches, spelling-games, etc. For suggestive supplementary work, teachers are referred to "Methods of Teaching," pp. 132 to 136, and Swinton's Word-Book.

6. Take a few easy, elementary exercises in English prefixes and suffixes. For examples see Swinton's Word Primer and Word-Book; "Methods of Teaching," p. 138; "Word-Matches."

LANGUAGE AND GRAMMAR.

I. Teachers must give patient and persistent attention to the correction of vulgarisms, provincialisms, and current errors in speech.

II. The necessity of a progressive and graduated course of training in the mother-tongue, extending over some years, and beginning in practice and ending in theory, is now generally recognized and acted upon.

— *William Swinton.*

SPECIFIC DIRECTIONS.

1. State Lessons in Language completed. For supplementary exercises, teachers are referred to Swinton's Language Lessons; Reed and Kellogg's Language Lessons.

2. For suggestions in sentence-making and composition work, teachers are referred to "Methods of Teaching," pp. 258 to 275.

3. Pupils should be able to define the parts of speech and select them from the reading lessons.

4. A letter must be written once in two weeks.

5. The naming of parts of speech from reading lessons. Declension of personal pronouns; number and case of nouns;

comparison of adjectives; and conjugation of the verb *to be* in the Indicative Mood. Composition, once in two weeks; letters, abstracts of reading lessons, transposition, descriptions of excursions, visits, travels, or vacations, etc.

ARITHMETIC.

I. GENERAL OUTLINES.

4 1-2 hours a week.

Oral exercise with simple numbers, and arithmetic at sight, to precede, accompany, and follow each subject in written arithmetic.

1. Common fractions.

2. (*a*) The units of Solid Measure, with their relations. (*b*) Measuring the dimensions and finding the volumes of cubes and other rectangular solids.

3. Decimal fractions, to and including millionths.

II. SPECIFIC DIRECTIONS.

1. State Advanced Arithmetic in the hands of pupils to page 122.

2. In taking up the text-book treatment in fractions, it will be desirable to simplify the work somewhat. The greater part of the text-book examples involve uncommonly cumbersome operations, which consume time and result in nothing useful. Substitute questions that involve some principles, but have business fractions such as halves, quarters, eighths, twelfths, thirds, sixths and tenths. The same statement holds true with regard to the treatment of decimals.

Also, omit from the text book the following in full: Complex Fractions, p. 91: Oral Review in Fractions Exercises, 141, p.p. 94, 95, 96. Written Review in Fractions Exercises, 142, pp. 97, 98, 99, 100, 101. Contracted Division of Decimals, pp. 112, 113; Practical Work in Decimals, Exercise 168, pp. 113, 114, 115. Short Methods in Multiplication, pp. 115, 116, 117, 118.

3. Take the following tables and give short, simple, drill exercises of your own under each.:

1. Avoirdupois Weight.
2. Liquid Measure.
3. Long Measure.

4. United States money. Text Book Lessons on pp. 168, 169, 170.

5. Train pupils to write a promissory note and to make out a bill and a receipt.

6. Teach pupils the simplest elements of percentage, and the reckoning of simple interest on small sums of money for one year and fractions of a year.

7. Take Ward's Business Laws, No 1.

GENERAL DRILL EXERCISES.

8. Take once or twice a week, short, sharp class drills in adding short columns of units, the amount not to exceed 50. *Accuracy,* not rapidity, is the main thing. The aim is to have every member of the class get the exact answer.

9. Similar drill in adding dollars and cents, the amount not to exceed $50. Give ample time; but expect *every pupil* to have the exact answer.

10. Drill in counting with the class standing in line, by 2's, 4's, 5's; by ¼, ⅛; by 1½, 2½, etc.

11. Train pupils to make up short business questions in mental arithmetic; particularly such examples as might occur in buying articles at a grocery store.

12. For aid in mental arithmetic teachers are referred to "Easy Problems for Beginners," by Seymour Eaton, and Warren Colburn's "Mental Arithmetic."

GEOGRAPHY.

I. Only essentials are to be memorized.

II. In general, omit statistics, latitude and longitude of cities, areas and heights of mountains.

III. Having settled on a few main things worth remembering, fix them in the memory of your pupils by review upon review.

IV. Do not require your pupils to waste their time in drawing elaborate maps.

I. General Outlines.

2 1-2 Hours a Week.

SECOND STAGE OF THE STUDY OF GEOGRAPHY.

1. Study of the earth as a globe: Simple illustrations and statements with reference to form; size; meridians and parallels, with their use; motions and their effects; zones and their characteristics.

2. Physical features of North America and South America, studied and compared; position on the globe; position relative to other grand divisions; size; form; surface.

3. Observations to accompany the study of geography: (*a*) Apparent movements of the sun, moon and stars, and varying time of their rising and setting. (*b*) Difference in heat of the sun's rays at different hours of the day. (*c*) Change in direction of the sun's rays coming through a school-room window at the same hour during the year. (*d*) Varying length of the noonday shadows. (*e*) Changes of weather, wind and seasons.

II. Specific Directions.

1. State Elementary Geography, pp. 30 to 88.

2. Special Geography of California, pp. 62 to 88.

3. General lessons on British America, Mexico and Central America.

4. Call the attention of your class to the situation of the following cities, and explain our commercial relations with them:

London,
Liverpool,
New York,
Boston,
Chicago,
Paris,
Havre,
Hamburg,
Hong Kong,
Melbourne,
Honolulu,
Victoria,
Rio Janeiro.

OBSERVATION LESSONS IN GEOGRAPHY.

1. Difference in the heat of the sun's rays at morning, mid-day and evening.

2. Change in the direction of the sun's rays coming through a school-room window at the same hour during the year.

3. Varying length of noonday shadows in winter and in summer.

4. Changes of weather, wind and seasons.

5. Difference in points of the horizon at which the sun rises and sets in summer and winter.

6. For suggestive questions teachers are referred to "Methods of Teaching," pp. 243, 244. Also to Col. Parker's "How to Teach Geography."

ELEMENTS OF NATURAL SCIENCE.

1. Do not be over-scientific. Avoid technical terms when common names will serve your purpose. "It is not science that we want here," says Superintendent Eliot; "much less is it the lion's skin sometimes wrapped round the pretence of science, but the simple truth."

2. Endeavor to train your scholars to observe accurately, to be sure of facts, to think for themselves, to reason correctly, and not to make up their minds until they have reflected carefully upon all the facts.

3. Train your pupils to write out on slates or paper what they can remember about their oral lessons. Writing leads to habits of attention, serves to fix ideas in the memory, and leads to a ready and correct use of language.

4. The *uses* of the object lesson may be summed up as follows:

    (1.) They constitute the first efforts in gaining an empirical knowledge of *things.*

    (2.) They train the mind to habits of connected thought.

(3.) They stimulate *curiosity*, the motive power of the youthful mind.

5. "The teacher," says Bain, "can make anything he pleases out of the object-lesson; it may aid the *conceiving* faculty or it may not. The first good effect of it is to waken up observation to things within the pupil's ken; by asking such questions as will send them back to re-examine what they have been in the habit of slurring over, or by questioning them on objects actually present."

6. "The predominant aspect of the object-lesson," says Currie, "is the mental exercises it gives; it is meant to awaken the intelligence, and to cultivate the different phases of observation, conception, and taste, without which little satisfactory progress can be made in education. It is a disciplining, not a utilitarian process; the information it gives is a means, not an end.

"The range of this department of instruction is exceedingly comprehensive. It draws its materials from all the branches of knowledge, dealing with things which can interest the child or exercise his mind. Thus, it is natural history for children; for it directs their attention to animals of all classes, domestic and others, their qualities, habits, and uses; to trees and plants and flowers; to the metals, and other minerals which, from their properties, are in constant use. It is physical science for children; for it leads them to observe the phenomena of the heavens—sun, moon, and stars; the seasons, with the light and heat which make the changes of the weather; and the properties of the bodies which form the mass of matter around us. It is domestic economy for children; for it exhibits to them the things and processes daily used in their homes, and the ways to use them rightly. It is industrial and social economy for children; for it describes the various trades, processes in different walks of art, and the arrangements as to the division of labor which society has sanctioned for carrying these on in harmony and mutual dependence. It is physiology for children; for it tells them of their own bodies, and the uses of the various members for physical and mental ends, with the way to use them best and to avoid their abuse. It is the science of common things for children; for it disregards nothing which can come under their notice in their intercourse with their fellows or their superiors. And, finally, it is geography for children; since it has favorite subjects of illustration in mountain and river, forest, plain, and desert, the different climates of the earth, with their productions and the habits of their people, the populous city, and the scattered wigwams of the savage."

I. GENERAL OUTLINES.

1 1-2 Hours a Week.

1. Lessons on the HUMAN BODY, with special reference to HYGIENE: (*a*) The muscles as a motor apparatus. (*b*) The structure, kinds, action, and uses of the muscles. (*c*) How muscles are developed. (*d*) The effects of exercise and rest, and of the use of narcotics and alcoholic stimulants upon the muscles.

2. Lessons on the HUMAN BODY continued: (*a*) The skin as a covering. (*b*) Its layers and structure; the hair and nails. (*c*) The perspiratory and sebaceous glands. (*d*) The functions of the skin and their relation to the health of the body; the effects of bathing, and of proper clothing. Teachers will use Smith's "Physiology Primer."

3. Observation lessons, as far as the time assigned will allow, on:

(*a*) ANIMALS: Typical and familiar specimens of radiates and mollusks (sponge, coral, star-fish, oyster, snail, jelly-fish)—Animals as related to arts, industries, trade and commerce (elephant, whale, seal, cochineal, ostrich).

(*b*) PLANTS used for food, clothing, shelter, fuel and medicine (grains, vegetables, fruits; cotton, flax; pine, oak)—Plants as related to manufactures, trade and commerce (manila, caoutchouc; cotton, coffee, tea).—Class collection of typical specimens.

SPECIAL LESSONS ON PLANTS.

1. Fruits, seeds, roots and useful woods observed and compared; objects being placed on the desks of pupils.

2. Growth from buds, branches, bulbs and slips.

3. Simple study in season of a few fruit-tree blossoms, such as apple, pear, peach and plum.

4. Simple study of a few common flowers, such as violet, lilac, buttercup and poppy.

ELEMENTARY SCIENCE.

(*a*) MINERALS: Systematic observations of common rocks and minerals (granite, quartz, feldspar, mica, hornblende, syenite, marble—Collection and labeling of specimens.

(*b*) PHENOMENA OF NATURE: The sun, moon and stars; their rising and setting; sun's mark at noon, altitude of the sun, length of days; phases of the moon; planets visible; polar and circumpolar stars.

HEALTH, MORALS, POLITENESS, PATRIOTISM.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California.*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism; to teach them to avoid idleness, profanity and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties and dignity of American citizenship." —*School Law of California.*

TRAINING IN POLITENESS.

I. "Give a boy address and accomplishments, and you give him the mastery of palaces and fortunes where he goes."

—*Ralph Waldo Emerson.*

II. "I wish good behavior might enter into the curruculum of every school in our country. Under this head should be taught such things as how to gracefully enter a room, meet with the person upon whom the pupil is supposed to be calling, pass the compliments of the day, and politely leave the room." —*J. H. French.*

SHORT TALKS ON TOPICS.

1. Common rules of politeness.
2. Regard for the feelings of others.
3. The habit of whining, complaining and fault-finding.
4. Cheerfulness.
5. Anger.
6. Backbiting and tattling.

MORAL TRAINING.

General Principles.

I. "If moral training consisted merely in *telling* children what is right and what is wrong, and in dealing out ethical maxims and proverbs; if it were enough merely to tell children it is wicked to lie, steal, or swear; if it would make boys truthful and honest merely to learn commandments by rote—then the teacher's task would be an easy one."

II. "Do not attempt to force children into precocious moral goodness. Be content with moderate measures and moderate results." —*Herbert Spencer.*

III. "Do not regret the exhibition of considerable self-will on the part of children. The independent boy is the father of the independent man." —*Herbert Spencer.*

IV. Teachers are directed to give instruction in good manners and morals at the opening of school on Monday morning of each week, taking from 15 to 30 minutes for each lesson. In giving such instructions teachers must keep strictly within the bounds of manners and morals, and thus avoid all occasion for treating of or alluding to sectarian subjects.

I. SHORT CLASS TALK ON TOPICS.

1. Fighting and quarreling.
2. Calling nicknames.
3. Truthfulness.
4. Honesty.
5. Cheating.
6. Slang, vulgarity and profanity.
7. Cruelty to animals.
8. Honor.
9. Regard for public property, such as school buildings, parks, monuments, etc.

II. ADDITIONAL TOPICS.

I. FORGIVENESS—(1) of those who have injured us; (2) of enemies.

II. GOOD MANNERS—(1) at home; (2) in school; (3) in company; (4) in public places.

III. INDUSTRY—(1) labor, a duty and privilege; (2) right use of time; (3) self-reliance.

IV. EVIL SPEAKING—(1) slander; (2) tale-bearing; (3) faults of others—charity; (4) kind words.

V. BAD LANGUAGE—(1) profanity, foolish and wicked; (2) slang, vulgar and impolite; (3) obscene language.

VI. BAD HABITS—(1) that destroy health; (2) that destroy reputation; (3) that waste money; (4) that dishonor one's self and family; (5) that take away self-control; (6) that are offensive.

III. HISTORY AND PATRIOTISM.

1. The reading of short sketches of the lives of persons famous in American history, such as Washington, John Adams, Jefferson, Jackson, Lincoln, Grant, etc.

2. An account of the battle of Bunker Hill, and the Declar-

ation of Independence. Teachers will read to their classes the poem by Oliver Wendel Holmes, entitled: "Grandmother's Story of the Battle of Bunker Hill."

3. The reading of stories from American history.

4. The reading of short sketches of American inventors, such as Fulton, Whitney, Howe, Morse, Edison.

5. The discovery of gold in California, and a few other landmarks in the history of our State.

6. Call attention to a few American authors, such as Longfellow, Whittier, Holmes, and Miss Alcott.

7. Teachers will require the boys of their class to memorize two paragraphs of Daniel Webster's speech—Liberty and Union.

SIXTH GRADE.

Home Lessons.

"The lessons assigned for home study to pupils in the sixth and seventh grades shall be such as to require not more than one hour and a half."

Language and Grammar.

8 Hours a Week.

I. General Outlines.

Oral and Written Expressions, including Writing, 4 hours.	Reading, 4 hours.

1. Oral and Written Exercises: (*a*) Oral reproduction of the reading lessons. (*b*) Oral and written reproduction of supplementary reading matter. (*c*) Descriptions of scenes, real and imaginary. (*d*) The thoughts and sentiments in some simple poems expressed, or the story of them told, in the pupils' own words. (*e*) Conversations and written exercises on good manners and good morals. (*f*) Conversations on geographical and historical subjects, in preparation for letters and other

forms of composition. (*g*) Composition-writing, including the preparation of topics from which letters and other compositions may be written; paragraphing. (*h*) The correct pronunciation and use of words frequently mispronounced and misused. (*i*) Use of the dictionary. (*j*) Common homonyms and synonyms. (*k*) A few roots, prefixes and suffixes.

2. GRAMMAR.—THE STUDY OF EASY SENTENCES: (*a*) The subject and the predicate. (*b*) Declarative, interrogative, imperative, and exclamatory sentences. (*c*) The uses of words in forming sentences—preparatory to classifying words as parts of speech. (*d*) Nouns, pronouns, verbs, adjectives, adverbs, conjunctions and interjections. (*e*) Adjective and adverbial phrases and clauses. (*f*) Prepositions.

3. WRITING: (*a*) Practice in free movements. (*b*) One writing-book completed each half-year, or its equivalent. (*c*) Copying short letters or notes, written in correct form. (*d*) Writing, in blankbooks, original and dictated exercises, poetry from memory, and choice extracts.

4. READING: (*a*) From the authorized text-book; (*b*) from the permanent, or collateral supplementary books; and (*c*) from the circulating sets of supplementary books suitable for this grade. (*d*) Choice poems and selections from prose are to be studied, committed to memory, and recited.

NOTE.—Read the notes under Grades IV and V. The text-book in reading becomes of less importance as pupils reach the higher classes. Sections from it for class use should be worth studying, should create an interest in the works from which they are taken, or should give good practice in different styles of oral reading. The great object of reading can now be accomplished by means of supplementary books. The right use of these in the class-room will lead pupils to read books elsewhere to the best advantage. Excite such an interest as will cause pupils to read with minds alert, and to seize upon the author's thoughts and sentiments with a grasp that holds. Suggest to your pupils interesting books that may be taken from the Public Library or its branches; and find out the results of the reading.

II. Specific Directions.

1. State Third Reader to Lesson 60, two lessons a week. Supplementary reading, two lessons a week.

2. In marking words in the reading lessons to be studied for spelling, omit words not clearly within the range of the pupil's knowledge. Require no sentence-making with words selected from reading lessons.

3. In using the spelling-book, take an occasional exercise in sentence-writing.

4. Require the class to memorize the following selections:

    1. America.
    2. The Village Blacksmith.
    3. The Old Oaken Bucket.
    4. One short poem from Bryant and one from Whittier.

5. Question your pupils about what books they read at home, and give them short lists of library books suitable for them to read.

6. State Speller, Lesson 101 to 201.

7. Supplementary exercises, both oral and written, in spelling lists of common words often misspelled; spelling-matches and spelling-games. Teachers are referred to Swinton's Word Book, and to "Methods of Teaching," pp. 132 to 140.

8. Short exercises in Word-Analysis, taking up English prefixes and suffixes, and a few Latin roots.

Language and Grammar.

1. State Grammar in the hands of pupils, for the purpose of taking up a few selected sections:

    (1) Formation of plurals. Lessons 57, 58, 60 and 61.
    (2) Possessive Forms. Lessons 74 and 76.
    (3) Pronouns. Lesson 77.

2. Easy parsing, using the simplest abbreviated forms to

show the relation of the word parsed to other words in the sentence.

3. Verbs.—Lesson 168. Select from the list 50 of the verbs in common use, and require pupils to learn the principal parts.

4. Conjugation of the verb *to be* in the Indicative Mood.

5. Uses of the participles and infinitives, the Parts of Speech, with the analysis of sentences and parsing, Conjugation of Verbs in the Indicative Mood. Parsing and analysis of easy sentences from the Reader. Composition, once in two weeks; letter writing; reports of oral lessons; transposition; abstracts of lessons in reading and geography.

6. Once a month require every pupil to write a letter. For forms see State Grammar, pp. 275 to 278.

ARITHMETIC.

There are two main things to be kept in view in teaching arithmetic. (1) Business Methods for practical use. (2) Mental training in habits of thought.

I. GENERAL OUTLINES.

3 1-2 hours a week.

Oral exercises with simple numbers, and arithmetic at sight, to precede, accompany, and follow each subject in written arithmetic.

1. Decimal and common fractions continued, and used in solving problems that involve the units of money, measures, weight, and time previously studied; and in measuring distances and dimensions, and in finding the areas of rectangles and the volumes of rectangular solids.

2. Percentage; and its applications to—

(*a*) Commission and other simple subjects.

(*b*) Simple interest.

II. SPECIFIC DIRECTIONS.

State Arithmetic, pp. 126 to 172; also Percentage, pp. 181 to 185.

Omit the following: Page 125, Sec. 28; omit in all examples, Express decimally; Metric System, except the Metre; Surveyor's Surface Measure. Page 136, examples from 20 to 37 inclusive. Page 149, omit examples from 25 to 41 inclusive. Longitude and Time; Page 159, examples 20 to 27 inclusive. Page 163, "Review," omit all examples headed "Metric." Examples 40 to 51 inclusive.

General.

1. Take one lesson a week for drill in accuracy in addition of small numbers; and of dollars, cents, and fractional cents. Exercises in mental arithmetic, including a review of tables of long measure, pounds, ounces and centals, etc.

Letter Writing.

2. Use Ward's Letter-Writing Business Forms, No. 2.

3. For supplemental examples teachers are referred to the "New Arithmetic," by 300 authors, edited by Seymour Eaton.

Geography.

Note.—"As travel broadens ideas, so will the study of geography, if rightly pursued; and pupils may increase the value of their lessons by reading books of travel and stories of great explorers. The teacher can afford to deal sparingly in statistics, latitudes, longitudes, areas, and heights, and to avoid dry definitions and detailed map questions that lead only to a recital of names of places destitute of associations. Such knowledge is not worth the time it takes to acquire it, though it may secure rapid and accurate recitations."

Specific Directions.

1. State Elementary Geography completed and reviewed.

2. Special study of Europe, particularly of Great Britain, France and Germany. Our commercial relations with those countries. Important cities to be taken in detail: London, Liverpool, Sheffield, Birmingham, Paris, Havre, Bordeaux, Berlin, Hamburg, Bremen, Rome.

3. Special Geography of California.

4. South America. Striking features of Physical Geography. Important countries: Brazil, Chile. Our commercial relations with those countries.

5. For detailed suggestions, teachers are referred to "Methods of Teaching," pp. 156 to 163, and pp. 244 to 248; to Col. Parker's "How to Study Geography," and to Frye's "Geography Teaching."

HISTORY AND PATRIOTISM.

2 hours a week.

1. Story of the settlement of Massachusetts, Virginia, Pennsylvania and New York.

2. A few leading events in the history of California.

3. Reading from Swinton's Primary History of the United States, and Eggleston's History.

4. Require pupils to learn by heart one patriotic poem.

ELEMENTS OF NATURAL SCIENCE.

1 1-2 Hours a Week.

1. ANATOMY, PHYSIOLOGY, AND HYGIENE OF THE HUMAN BODY:

(*a*) The bones, muscles, and skin.

(*b*) The growth, waste, and renewal of the body; the kinds and need of food and drink.—The organs and processes of digestion.—The relation of food, drink, and digestion to health.

(*c*) The composition and uses of the blood.—The organs of the circulation of the blood and their functions.—The relation of the blood and its circulation to health.

(*d*) The effects of the use of narcotics and of alcoholic and other stimulants upon the organs and processes of digestion and circulation. Use Smith's Physiology Primer.

2. Observation lessons, as far as the time assigned will allow, on:

MINERALS: Metals (iron, lead, tin; gold, silver, copper; coal, crystals).—Class collection and labeling of minerals.—Abstracts of observation lessons.

HEALTH, MORALS AND POLITENESS.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California.*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism; to teach them to avoid idleness, profanity and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties, and dignity of American citizenship."

—*School Law of California.*

I. TRAINING IN POLITENESS.

1. True politeness consists in having and showing due regard for the feelings, comfort and convenience of others.
2. Take up topics mentioned in the two preceding grades.
3. Read to your pupils the rules and customs of good society, from the best book on the subject that you can find.

II. MORAL TRAINING.

I. "There are in all children tendencies to good feelings and actions, and also tendencies and impulses to wrong-doing. These tendencies, whether good or bad, are the result of hereditary transmission and surrounding circumstances."

—*Herbert Spencer.*

II. "The aim of your discipline should be to produce a self-governing being, not to produce a being to be governed by others."

—*Herbert Spencer.*

III. "Whatever moral benefit *can* be effected by education must be effected by an education that is *emotional* rather than perceptive. If, in place of making a child *understand* that this thing is *right* and the other *wrong*, you make him *feel* that they are; if you make virtue *loved* and vice *loathed*—you may do some good." —*Herbert Spencer.*

IV. Teachers are directed to give instruction in good morals and good manners at the opening of school on Monday morning of each week, taking from 15 to 30 minutes for each lesson. In giving such instruction, teachers must keep strictly within the bounds of morals and manners, and thus avoid all occasion for treating of or alluding to sectarian subjects.

Topics for Short Talks.

1. Promises.
2. Betting.
3. Stealing.
4. Profanity.
5. Courage and cowardice.
6. Word of honor.
7. Kindness to animals.

Note.—Teachers are referred to "The Virtues and Their Reasons," by Bierblower.

SEVENTH GRADE.

"The lessons assigned for home study to pupils in the Sixth and Seventh Grades shall be such as to require not more than one hour and a half."

Reading, Language and Grammar.

I. General Outlines.

8 Hours a Week.

Oral and Written Expression, including Writing, 4½ hours.	Reading, 3½ hours.

1. Oral and Written Exercises: (*a*) Reproduction of

such supplementary reading matter as may be used. (*b*) Abstracts and summaries of lessons, of stories, and of other kinds of composition. (*c*) Conversations and written exercises on good manners and good morals. (*d*) Outlines prepared for original compositions. (*e*) Narratives; descriptions of real or imaginary objects, scenes and experiences. (*f*) Letter-writing upon geographical, historical and other subjects; also, business letters, notes of invitation, of recommendation, *etc.* (*g*) Oral and written exercises on poems carefully studied; and also on beautiful pictures, statuary, *etc.*, studied where opportunity offers. (*h*) Dictation exercises. (*i*) Synonyms. (*j*) A few roots, prefixes and suffixes; and compound words.

2. GRAMMAR.—THE STUDY OF SIMPLE, COMPOUND AND COMPLEX SENTENCES: (*a*) Analysis. (*b*) All the parts of speech including their properties—special attention to be given to such changes of form as indicate properties, and also the uses of auxiliaries. (*c*) Principles of syntax illustrated by familiar examples. (*d*) Punctuation.

NOTE 1.—The scope of the work in Grammar for Grade VII is the same as for Grade VIII; but easier sentences should be selected for Grade VII, and only the most common uses should be studied.

II. SPECIFIC DIRECTIONS.

1. State Third Reader, Lesson 60 to 128, two lessons a week.

Supplementary reading, two lessons a week.

2. For class concert reading. Lessons 65, 77, 99.

3. To be memorized for concert recitation:

(1.) Our Country, p. 195.
(2.) What I Live For, p. 211.
(3.) The Blue and the Gray, 225.
(4.) Patrick Henry's Address (for Boys), paragraphs 7, 8 and 9, p. 242.
(4.) Independence (for Boys,) p. 278.

5. State Speller, Lesson 201 to 301. Use the speller in a common-sense way, taking only an occasional exercise in sentence-making or defining.

6. Short exercises in Word Analysis, taking out of the State Speller a limited number of prefixes, suffixes and roots.

For suggestions as to methods, teachers are referred to Swinton's Word-Analysis, "Methods of Teaching," pp. 137 to 140.

7. Question your pupils about the books they read at home, and suggest suitable books for them to draw from the Free Library.

8. Once a month require every pupil to write a letter.

GRAMMAR.

1. State English Grammar begun.

2. Take the simpler parts of sentence work in Part I.

The use of diagrams optional with teachers.

3. In Part II, take to Lesson 125.

4. Conjugation of Verbs in the Indicative Mood.

5. Principal parts of 50 irregular verbs in common use.

6. For study and parsing, take the following selections from the Third Reader:

(1.) Thanatopsis.
(2.) Battle of Waterloo.
(3.) What I Live For.
(4.) Brutus's Address.

ARITHMETIC.

I. GENERAL OUTLINE.

3 1-2 Hours a Week.

Oral exercises with simple numbers, and arithmetic at sight, to precede, accompany, and follow each subject in written arithmetic.

1. Percentage, continued; its applications to:

(*a*) Profit and loss.

(*b*) Partial payments.

(*c*) Bank discount.

2. Compound numbers with simple practical problems—including only the units previously studied, and the units of Troy Weight, Circular Measure and English Money. Mensuration of straight lines, of rectangles, and rectangular solids. Review of common and decimal fractions and compound numbers. Review with special reference to the explanation of principles and the analysis of operations, particularly in fractions. Mental arithmetic, carried along in connection with written, the same topics in both kinds being taught at the same time.

II. Specific Directions.

1. Use Ward's Letter-Writing and Business Form, No. 3.
2. State Arithmetic, from p. 172 to 210.
3. Drill on common and decimal fractions.
4. For supplementary examples, teachers are referred to the "New Arithmetic," by Seymour Eaton.

Geography.

Note.—The text-book now in use in this grade will be continued only until the new State Geography is published next July. With the present text-book everything must depend on the skill and judgment of teachers.

Specific Directions.

1. Let pupils read the first twenty sections to p. 46, as supplementary reading, noting now and then something, say two per cent. of the whole, to be remembered.

2. Begin regular recitations with Part II, p. 48.

3. Exercises on the map, pp. 51 and 53. Answered with open book in the hands of pupils.

4. Pages 54 to 57. To be read aloud in class, but not memorized. Questions on map of the United States, answered with open book.

5. Questions on maps of sections of the United States, answered with open book. Pages 61 to 70.

6. Text of Descriptive Geography, read aloud as supplementary reading. Now and then some important statement should be marked to be memorized.

.7 Map of British Isles, with descriptive text. Cities in detail: London, Liverpool, Manchester, Sheffield, Glasgow; and our commercial relations with them.

8. To vary the monotony of text-book lessons, occasionally take a geography match or game. For suggestions, see "Methods of Teaching," pp. 161, 162, and pp. 243 to 257. Col. Parker's "How to Study Geography" will prove a useful aid, and Frye's "Geography Teaching" will be very suggestive of good methods.

History of the United States.

I. Whoever undertakes to instruct youth in history must regard equally the memory, the understanding, and the feelings.

—*Niemeyer.*

II. There is no one "patent method" for teaching history. Teachers, by skill, tact, and stories of information, must clothe the skeleton of facts with the flesh of imagination and vitalize the whole with the breath of life.

Specific Directions.

Time, 3 hours a week.

1. State History of the United States, in the hands of pupils.

2. The study of United States History, through the American Revolution.

3. The study of English and other European History, so far as it is connected with American History.

4. Let the advance lesson be read aloud in the class. Call attention to the very few important facts to be memorized for recitation, and let pupils mark them with a pencil. The

greater part of the book is intended not to be learned by heart, but only to be attentively read.

5. Of the early discoveries, single out three or four to be stamped on the memory, and let the others severely alone after reading about them once.

6. In the period of settlement, select the four great centers: Virginia, Massachusetts, New York and Pennsylvania. The remainder belong to *local State* History.

7. Out of the numerous details of Colonial and Indian Wars, select the three or four main facts of the French and Indian Wars, and have them well understood.

8. Of the Revolutionary War, single out the causes that led to it, and not more than half a dozen of the battles. Impress on your pupils the character and services of Washington.

9. Chronological tables of dates are valuable only for references. Fix in the minds of your pupils, by frequent reviews, the dates of a very few, not exceeding a dozen, great events.

ELEMENTS OE NATURAL SCIENCE.

1 1-2 hours a week.

1. ANATOMY, PHYSIOLOGY, AND HYGIENE OF THE HUMAN BODY, continued. Text-book, Steele's Hygiene Abridged, to the Nervous System.

(*a*) The composition and purity of the air.—The organs of respiration and their functions.—The structure of the lungs.—The effect of respiration upon the air and blood in the lungs, and upon the air in the room.—The relation of respiration to health, with special reference to ventilation, disinfectants, exercise, and clothing.

(*b*) The vocal organs and their functions.

(*c*) The nervous system as a directive power.—Its organs and their functions.—The relation of the nervous system to health, with special reference to exercise, work and study, rest and sleep, food and drink.

(*d*) The special senses; the organs and their functions.—How to keep the organs of sense in health, and how to train them.

(*e*) The effects of the use of narcotics and stimulants upon respiration and the nervous system, and upon mental activity.

(*f*) Reviews.

HEALTH, MORALS, POLITENESS, PATRIOTISM.

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"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice, and patriotism; to teach them to avoid idleness, profanity, and falsehood; and to instruct them in the principles of a free governmont, and to train them up to a true comprehension of the rights, duties, and dignity of American citizenship."

—*School Law of California.*

I. TRAINING IN POLITENESS.

I. "A noble and attractive every-day bearing comes of goodness, of sincerity, of refinement, and these are bred in years, not moments."

—*Huntington.*

II. "If one is centrally true, kind, honorable, delicate, and considerate, he will almost, without fail, have manners that will take him into any circle where culture and taste prevail over folly."

—*Munger.*

III. "True politeness consists in having and showing due regard for the feelings, comfort, and convenience of others."

II. TOPICS FOR TALKS.

1. The usages of good society.
2. Politeness on the street.
3. Politeness in traveling.
4. Politeness at home.
5. Politeness to servants and employes.

III. MORAL TRAINING.

General Principles.

I. Children must not only be *taught* what is right, but they must also *do* what is right. It is possible for teachers to breathe into a school a spirit of honor, usefulness, and honesty that shall control every new pupil that enters the school. This spirit will put down vulgarity, slang, profanity, impurity, slander, tattling, lying, and meanness.

II. Character is formed by *training* rather than by *teaching.* Teachers cannot lecture pupils into good manners, nor change bad habits by long speeches. Bad habits can be changed only by a repetition of *doings,* and it is in these *doings* that training consists.

TOPICS FOR SHORT TALKS.

I. Care of health a duty.
II. Earning a living.
III. Perseverance.
IV. Temperance.
V. Gluttony.
VI. Reading good books.
VII. Civil Duties—(1) love of country; (2) respect for rulers; (3) obedience to law; (4) fidelity in office—bribery; (5) oaths—perjury; (6) the ballot—buying or selling votes; (7) dignity and honor of citizenship.

NOTE.—Teachers are referred to Comegy's "Primer of Ethics," and "The Virtues and their Reasons," by Bierblower.

EIGHTH GRADE.

General Principles.

I. "The lessons assigned for home study to pupils in the eighth grade shall be such as to require not more than two hours."

—*Rules of the Board of Education.*

II. "The aim of all intellectual training for the mass of the people should be to cultivate common-sense."

—*John Stuart Mill.*

III. As at least one-half of the pupils in this grade will close their school life when they graduate, it is the duty of both principals, teachers, superintendent and school officials to secure for them that kind of training and instruction which will give them the best possible school outfit for the duties of life.

LANGUAGE AND GRAMMAR.

I. GENERAL OUTLINES.

8 Hours a Week.

Oral and Written Expression, including Writing.	Reading.

1. ORAL AND WRITTEN EXERCISES: (*a*) Reproduction of such supplementary reading matter as may be used. (*b*) Abstracts and summaries of lessons, of stories, and other kinds of composition. (*c*) Conversations and written exercises on good manners and good morals. (*d*) Outlines prepared for original composition. (*e*) Narratives; descriptions of real or imaginary objects, scenes and experiences. (*f*) Letter-writing on geographical, historical, and other subjects; also, business letters, notes of invitation, of recommendation, *etc.* (*g*) Oral and written exercises on poems carefully studied; and also on beautiful pictures, statuary, *etc.*, studied where opportunity offers. (*h*) Paragraphing. (*i*) Synonyms. (*j*) Common roots, prefixes and suffixes; and compound words.

2. GRAMMAR.—THE STUDY OF COMPOUND AND COMPLEX SENTENCES: (*a*) Analysis of more difficult sentences. (*b*) Review of all the parts of speech, including a careful study of the properties and inflections of words. (*c*) Principles of syntax. (*d*) Punctuation.

3. WRITING: (*a*) Practice in free movements. (*b*) A part of the exercises in writing to be connected with book-keeping. (*c*) Writing, in blankbooks, compositions and dictated exercises, commercial forms, business letters and telegrams.

4. READING: (*a*) From text-books and from such books as are supplied for collateral reading or for general culture. (*b*) Choice poems and prose selections are to be studied and recited.

NOTE.—Read the notes under Grades VI and VII. The conditions are now more favorable for accomplishing the best results of reading. In the recitation of pieces, attention should be given to elocutionary effects. Moreover, in order to gain an understanding of metre and an appreciation of rhythm, pupils should now more directly study the forms of verse. They should be trained to give the sense, and yet to preserve the rhythm of the verse.

The more difficult reading matter, used by this class, will increase the mental grasp of the pupils and their ability to read well at sight. But chief emphasis must be laid on the highest object of all reading, viz.: an acquaintance with literature for the truth it contains, for the ennobling sentiments it inculcates, and for the high ideals it presents.

II. SPECIFIC DIRECTIONS.

1. State Third Reader completed from Lesson 120. Two lessons a week.

Drill mainly as an exercise in reading aloud. Take but few lessons in spelling from the Reader.

Supplementary reading to any extent that teachers can find time.

2. State Speller completed from Lesson 301.

Commence work on prefixes, suffixes and roots at the beginning of the year, taking two short lessons a week in connection with spelling. As an aid to this work, teachers are referred to Swinton's Word Analysis, or the Normal Word Book, or Reed & Kellogg's Word Analysis.

3. Review and apply the rules for spelling in the State Speller.

4. Selections to be memorized by the class:
    1. Maud Muller, p. 187.
    2. The Heritage Lawyer, pp. 7, 8 and 9.

5. Thorough concert drill on the lists of "words often mispronounced," at the head of each reading lesson.

6. Definitions of words as required at the head of each reading lesson.

7. Articulation drill at the head of reading lessons taken by the class in concert drill.

8. In every reading lesson whenever a sentence affords some marked illustration of an important rule in grammar, call the attention of pupils to it.

9. Teachers will question their classes about the kind of books pupils are reading at home, and will give them short lists of suitable library books for home reading.

10. Teachers must direct pupils how to obtain books from the Free Library, and must endeavor in every way possible to stimulate and cultivate a taste for good books.

11. Read and study Longfellow's "Evangeline."

GRAMMAR.

General Principles.

I. "Grammar is more difficult than arithmetic, and is probably on a par with the beginnings of algebra and geometry."
—*Bain.*

II. "I hold that the proper study of language is an intellectual discipline of the highest kind. The piercing through the involved and inverted sentences of "*Paradise Lost*"; the linking of the verb to its often distant nominative, of the relative to its often distant antecedent, of the agent to the object of the transitive verb, of the preposition to the noun or pronoun which is governed; the study of the variations in mood and tense; the transformations often necessary to bring out the true grammatical structure of a sentence—all this was to my young mind a discipline of the highest value, and, indeed, a source of unflagging delight."

—*Tyndall.*

Specific Directions.

1. State Grammar completed and reviewed. Teachers will bear in mind that the main object of the study of grammar is not so much to enable pupils to speak and write correctly as *to enable them better to understand what they read.* A knowledge of grammar is essential to a right appreciation of the masterpieces of literature. With pupils of the highest grade in the Grammar School, the *right* study of grammar is a means of mental discipline fully equal to that of mathematics.

2. Teachers will require their classes to take up the following selections for a thorough analytical study in parsing, structure of sentences, and figures of speech:

(1.) Gray's Elegy, State Reader, p. 353.
(2.) Apostrophe to the Ocean, p. 293.
(3.) Hamlet's Soliloquy, p. 383.
(4.) Bunker Hill Monument, p. 411.

3. The use of diagrams in analyzing sentences is optional with teachers. Special attention to be given to verbs, participles, infinitives, and relative pronouns.

4. Once a month give an exercise in letter-writing.

5. Occasionally give out a list of subjects for a studied composition, to be written out of school. Give out a list of half a dozen subjects and allow each pupil to select the one that suits him best. For suggestions in this direction, teachers are referred to "Methods of Teaching," pp. 268 to 278.

ARITHMETIC.

General Principles.

I. "Life is not long enough to spend so large a proportion of it on arithmetic as is spent in the modern method of teaching it; and arithmetic is too valuable an art to have our children neglect to acquire facility in it."

—*Thomas Hill.*

II. The ruling principle in the work of this grade should be to give the chief attention to accuracy in working the common sense examples of actual business in a business way. Slur over very lightly the schoolmasterisms that fill up the greater part of the school text-books.

I. GENERAL OUTLINES.

Simple and compound interest; partial payments; commission and brokerage; stocks; profit and loss; banking; discount; ratio and proportion; square root; review with special reference to the discussion of principles, and the analysis of operations; mental arithmetic taken in connection with the review of topics in written arithmetic.

II. SPECIFIC DIRECTIONS.

1. Text book completed from p. 210. Take up Longitude and Time, which was omitted in the seventh grade work.

2. Omit pp. 233 to 236 inclusive. Cube Root, pp. 241 to 245 inclusive. All of solids except prisms, pp. 252 to 256 inclusive. Omit all of Miscellaneous Problems, pp. 257 to 261 inclusive, and substitute short, practical business examples, involving a review of everything in the book except what has been omitted in the several grades below the eighth grade.

3. Use Ward's Letter Writing and Business Forms, No. 4.

4. Give a thorough and practical review on business operations with common and decimal fractions. In this grade it is desirable that pupils should be trained to give clear analytical demonstrations of rules in common fractions. For analytical

methods, teachers are referred to "Methods of Teaching," pp. 215 to 227.

4. Carry on Mental and Written Arithmetic together. Introduce principles by mental operations with small numbers; then, having fixed the principle, apply the rule to larger numbers on the slate or blackboard.

6. An excellent class drill in mental arithmetic is as follows: Make up a set of ten short business questions; read a question and allow from a quarter to a half-minute for the mental work, and require the answers to be written on slates or paper; so continue with the set. Then let pupils exchange papers and credit the correct answers as given by the teacher. Aside from practical business training, the disciplinary value of the exercise is *that it trains to a habit of fixed attention.* For model exercises, teachers are referred to "Methods of Teaching," pp. 224 to 230.

7. For supplementary examples teachers are referred to the "New Arithmetic," by Seymour Eaton.

GEOMETRY.

Time, 1 hour a week.

An elementary course in the practical applications of Geometry. Teachers are referred to Spencer's "Inventional Geometry." Hill's "Lessons in Geometry."

GEOGRAPHY.

1. Special Geography of the Pacific Coast in connection with the study of Central America, Mexico, Chile and Brazil, and our commercial relations with these countries.

2. Special study of Australia, the Sandwich Islands, China and Japan, and our commercial relations with these countries.

3. A review of the cardinal points in the geography of our own country and of Europe, and of our commercial relations with Great Britain, France and Germany.

4. Relieve the monotony of daily book lessons by exercises

intended to stimulate and amuse. Show pupils the pictures from illustrated magazines or papers, or books, of beautiful or grand scenery, of cities, of great natural curiosities. Read to them interesting descriptions by travelers.

5. Enliven the text-book work by geography-matches or geography-games. See "Methods of Teaching," pp. 161 and 162.

6. For suggestive exercises and reviews of essential facts, teachers are referred to "Methods of Teaching," pp. 246 to 257; also to Col. Parker's "How to Study Geography," and King's "Methods and Aids in Geography," Swinton's "Complete Course in Geography,"—general review of the world at the end of the book; and Fry's "Geography of Teaching."

History of the United States.

I. "Whoever undertakes to instruct youth in history must regard equally the memory, the understanding, and the feelings." —*Niemeyer.*

II. "All history resolves itself very easily into the biography of a few stout and earnest persons."

—*Ralph Waldo Emerson.*

III. "To the youthful spirit, the great attraction of history lies in the pictures of life and action, and in the sympathies which these evoke." —*William Russell.*

IV. Of all departments of early teaching, none is so unmanageable as history.

I. General Outlines.

3 hours a week.

1. The Civil Government of the United States, of California, and of San Francisco.

2. United States History, and also of its connection with English and other European History.

3. Reading the lives of persons famous in American and English History.

4. The study of Civil Government should be connected with the study of the history of the State and of the United States; and the actual workings of the City and the State Government should be observed.

II. Specific Directions.

1. Before taking review lessons of the seventh grade work in history, read the directions to teachers given in that grade, and limit your review to a few noted landmarks.

2. State History completed.

III. Elements of Natural Science.

1. Begin at once the collection of a school cabinet, and invite your pupils to bring in specimens. Encourage them to make collections for home cabinet, of minerals, shells, wood, etc. Take them on collecting tours into the fields and forests. "The elements of botany, zoology, and mineralogy," says Russell, "affords a delightful and effective means of training to habits of observing, comparing and classifying."

2. By wisely put questions, set your pupils to observing the habits of animals and birds, of ants, bees, wasps, flies and butterflies. Encourage them to make collections of butterflies and beetles. Persuade your pupils to buy a magnifying glass or a cheap microscope, and begin examining things for themselves. "For many years," says Carlyle, "it has been one of my constant regrets that no schoolmaster of mine had a knowledge of natural history, so far, at least, as to have taught me the grasses that grow by the wayside, and the little winged and wingless neighbors that are continually meeting me with a salutation which I cannot answer as things are. Why didn't somebody teach me the constellations, too, and make me at home in the starry heavens, which are always overhead, and which I don't half know to this day."

3. If you wish to succeed, you must do the actual work of the naturalist, and must make your pupils do it. You must fit yourself to do this work by taking an interest in it. It is not

at all necessary that you should be a specialist in botany, zoology, or natural philosophy; but it *is* necessary that you should know something about the true methods of the specialist. Taken up in the right spirit, instruction in natural sciences can be made one of the most effective means of education. "No subjects," says Professor Barnard, "are better suited than botany, zoology, and mineralogy to gratify the eager curiosity of the growing mind; to satisfy its cravings after positive knowledge; to keep alive the activity of the perceptive powers; to illustrate the beauty and value of method, and to lead to the formation of methodical habits of thought."

4. In physics, make your experiments with the simplest kind of improvised apparatus. Whenever you make an experiment, however simple, make it with great care and exactness, telling your pupils in advance what to expect and what to observe. Encourage them to make simple experiments at home by themselves. Set them to observing natural phenomena, such as rain, hail, snow, dew, frost, changes of season, etc. "The elements of physics," says Hotze, "are no more difficult for pupils than are the elements of arithmetic." "As a means of intellectual culture," says Tyndall, "the study of physics exercises and sharpens observation."

5. In giving the outlines of physiology, make use of real objects as far as practicable. The heart and lungs of a sheep or an ox can easily be obtained, and are always better than models or charts or pictures. If human bones cannot be obtained, take the bones of animals and make a lesson in comparative anatomy. Dissect the eye of an ox, the brain of a sheep, or calf or rabbit, and exhibit the skull of any domestic or wild animal. The chief object of lessons in anatomy and physiology is to make them the means of imparting a knowledge of the laws of health. Reiterate practical directions about cleanliness, ventilation, food, work, rest, play, sleep, and regular habits. Preach short sermons against idleness, gluttony, intemperance and impurity. Teach your pupils that without health life is a failure, and make them realize as fully as possible that they must themselves take care of their own health.

6. In botany, begin with collecting and examining plants, and end in classifying and naming them by referring to text-books. "Now, to learn to classify," says Bain, "is itself an education. In these natural history branches the art has been of necessity attended to, and is shown in the highest state of advancement. Botany is the most complete in its method, which is one of the recommendations of the science in early education. Mineralogy and zoology have greater difficulties to contend with; so that where they succeed, their success is all the greater."

7. First in the order of nature comes empirical knowledge; afterwards, scientific knowledge. Therefore, the younger the children, the less methodical should be their instruction. Beginners store up facts by items, often in an indirect and desultory manner.

8. Mere text-book study of natural science, without observation and experiment by the pupil, is *not* knowledge. The real guide to true knowledge is *a habit of observing.* "Learn to make a right use of your eyes," says Hugh Miller; "the commonest things are worth looking at, even stones and weeds, and the most familiar animals." Agassiz says, "the difficult art of thinking, of comparing, of discriminating, can be more readily acquired by examining natural objects for ourselves than in any other way."

9. Skillful questioning by the teacher is the chief means of awakening thought, and of inducing pupils to observe for themselves. Superintendent Eliot says, "We teach best when we seem to teach least. Tell the child a fact, and it is all your telling. Lead him to find it himself, and it seems to him all his finding. Because it seems so, he is interested in it, and his interest secures his mastery of it."

10. Stimulate and encourage curiosity. Faraday says, "I am indebted to curiosity for whatever progress I have made in science. There are common experiments which I perform now with as much glee at the result as when I was a boy." Lead your pupils into the practice of proposing questions in the class.

"If not snubbed and stunted," says Huxley, "by being told not to ask foolish questions, there is no limit to the intellectual craving of a young child, nor any bounds to the slow but solid accretion of knowledge, and the development of the thinking faculty in this way."

11. As to methods in specific lessons, the following directions by Superintendent Harris are to the point: "Prepare yourself beforehand on the subject of the lesson of the week, fixing in your mind exactly what subjects you will bring up, just what definitions and illustrations you will give or draw out of the class. All must be marked and written down in the form of a synopsis. The blackboard is the most valuable appliance in oral lessons; on it should be written the technical words discussed, the classification of the knowledge brought out in the recitation, and, whenever possible, illustrative drawings. Pains should be taken to select passages from the reference books, or from other books illustrative of the subject under discussion, to be read to the class with explanation and conversation. Wherever the subject is of such a nature as to allow of it, the teacher should bring in real objects illustrative of it, and encourage the children to do the same. But more stress should be laid on a direct appeal to their experience, encouraging them to describe what they have seen and heard, and arousing habits of reflection, and enabling the pupil to acquire a good command of language. Great care must be taken by the teacher not to burden the pupil with too many new technical phrases at a time, nor to fall into the opposite error of using only the loose, common vocabulary of ordinary life, which lacks scientific precision."

1. General Outlines.

2 hours a week.

1. Occasional lectures and conversations on Hygienic Duties.

2. Observation lessons, as far as the time assigned will allow, on:

Common Metals, Minerals, and Rocks:

(*a*) Simple mineral substances—characters of: (1) Metals that are native minerals (gold, silver, copper). (2) Metals from ores (lead, tin, iron). (3) Non-metals (sulphur, carbon).

(*b*) Compounds: Quartz, salt, pyrites, limestone, gypsum, feldspar, mica, hornblende, granite, marble, slate, and other common rocks.

3. Common facts in Physics learned from observation and experiment, in regard to as many of the following topics as the assigned time will allow:

(*a*) Matter; its properties, its three states.

(*b*) Motion and force; laws of motion.

(*c*) Gravitation; equilibrium, pendulum.

(*d*) Lever, wheel and axle, pulley, inclined plane, wedge, screw.

(*e*) Liquid pressure; specific gravity.

(*f*) Atmospheric pressure; barometer, pumps, siphon.

(*g*) Electricity, frictional and current; conductors, magnetism, compass, magnetic telegraph.

(*h*) Sound; echoes.

(*i*) Heat; diffusion, effects, thermometers.

(*j*) Light; reflection, refraction, lenses, solar spectrum color.

Note.—The greater part of the time assigned this year to Elementary Science must be given to Physics. If the teacher have not time to present to his class all the topics mentioned above, he will select such as he believes can be studied by his pupils with most advantage. He should, however, keep in mind the needs of such pupils as will finish their school training with the Grammar-School course of study.

Whatever topics be selected for study, it must be kept in mind that the method of studying them is all important. Pupils should observe and express the facts and should make their own inferences. Thus a keen interest may be excited and the best of mental training secured—a training in the practice of close observation, in careful thinking, and in accurate description. Instruction in Elements of Natural Science shall be given by the Principal. The aim of teachers in the following lessons should be:

1. To let facts speak for themselves.
2. To supply suitable experiments and specimens for the establishment of general laws.
3. To secure accuracy and solidity in the knowledge acquired.
4. To connect scientific principles with their practical applications.
5. To sharpen the observing powers.
6. To cultivate the imagination in the apprehension of theories where proof is not available.
7. To exercise the reasoning powers.
8. To form good intellectual habits.

II. BOOKKEEPING.

A short course in double entry bookkeeping, using Childs's blanks. This subject must be taught by the Principal of the School.

III. HEALTH, MORALS, POLITENESS, PATRIOTISM.

"1667. Instruction must be given in all grades of schools and in all classes during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."

—*School Law of California.*

"1702. It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice, and patriotism; to teach them to avoid idleness, profanity, and falsehood; and to instruct them in the principles of a free government, and to train them up to a true comprehension of the rights, duties and dignity of American citizenship."

—*School Law of California.*

I. Physiology.

The text-book used is the State Physiology.

II. Training in Politeness.

I. "A noble and attractive every-day bearing comes of goodness, of sincerity, of refinement; and these are bred in years, not moments. The principle that rules your life is the sure posture-master."

—*Bishop Huntington.*

III. Moral Training.

I. "To hear about good men is equivalent to living among them. For children there is absolutely no other morality than example either seen or narrated."

—*Richter.*

II. "Let a child read and understand such stories as the friendship of Damon and Pythias, the integrity of Aristocles, the fidelity of Regulus, the purity of Washington, the invincible perserverance of Franklin, and he will think differently and act differently all the days of his remaining life."

—*Horace Mann.*

III. "The use of the fable, the parable, and the example, is evidently meant to avoid direct lecturing, and to reach the mind by insinuation and circumvention."

—*Bain.*

IV. "Do but gain a boy's trust, you will readily enough guide him. Not by *authority* is your sway obtained; neither by *reasoning*; but by *inducement*."

—*Herbert Spencer.*

V. Teachers will keep steadily in mind the great central fact of life that *character* outweighs mere *intellect*; that high percentages in school examinations are but as dust in the balance compared with the moral qualities that constitute manhood and womanhood.

VI. "The divine method of moral instruction in a common school is that a cultivated and consecrated man or woman should rise upon it at nine o'clock in the morning and lead it through light and shadow, breeze and calm, tempest and tranquility, to the end. All special methods flow out of him, as the hours of the day mark the course of the sun."

—*Mayo.*

TOPICS FOR SHORT TALKS.

(1) Truth; (2) obedience; (3) industry; (4) honesty; (5) fidelity; (6) justice; (7) politeness; (8) duties at school; (9) duties to playmates; (10) benevolence; (11) duties to dumb creatures; (12) treatment of enemies; (13) conscience; (14) conscientiousness; (15) duties to parents; (16) forgiveness; (17) gratitude; (18) purity.

NOTE.—As a valuable hand-book for these lessons, teachers are referred to Comegys' "Primer of Ethics."

APPENDIX A.

GENERAL DIRECTIONS TO PRINCIPALS.

I. You are instructed to co-operate cheerfully with the Superintendent and the Class-Teachers in carrying into effect the detailed requirements of the Course of Study.

II. Before making out examination questions for any particular grade, read attentively the directions to the teachers of that grade, and make your questions according to the spirit of those instructions.

III. While it is desirable that in essentials there should be a central thread of uniformity in method throughout your school, it is *not* desirable that your assistants should be reduced to a Chinese system of doing everything in only one way. The life of all good teaching is the individuality and personality of the class teacher.

Put yourself in the place of your assistants, and allow them the freedom you would want for yourself. It is quite probable that all assistants together know as much about teaching as any one Principal knows. Uniformity in essentials, but diversity in particulars, should be the rule.

IV. It is your specific duty to see that assistants make use of the school globe, maps, charts, and other appliances; that supplementary reading matter is properly distributed and used; and that pupils are not overburdened with home lessons.

GENERAL INSTRUCTIONS TO ASSISTANTS.

I. You are required to observe the Course of Study to conform to the general regulations of the Principal, and to carry into effect the general directions of the Superintendent.

II. Stand ready to give a fair consideration to new methods of teaching, even if they differ from your preconceived ideas, or from the methods you have previously pursued.

III. Your chief work, beyond importing a small stock of specific knowledge, is *to teach pupils the right way to learn for themselves.*

IV. Assign but few lessons to be learned at home. Children ought to be allowed some time to work, play, eat, sleep and grow. Show your pupils how to study home lessons so that they may not be obliged to ask assistance from parents.

V. Review often, and always on *essentials. Repetition* is absolutely essential to habit, skill, readiness, accuracy and thoroughness.

VI. Make special efforts to prepare for the lessons in physical training, moral training, and training in politeness. These lessons must be given with as much regularity and thoroughness as the arithmetic or geography lesson. They are second in importance to nothing else in the course.

VII. A foundation principle in school government is that every pupil shall be allowed the largest liberty possible without infringing on the rights, interests, or convenience of others.

VIII. It should be the *aim* of teachers to govern without corporal punishment. But as most parents are compelled at times to resort to it in the home government of their children, so most teachers must sometimes resort to it in school.

IX. Corporal punishment should give place to punishments affecting the sense of *honor*, as soon as this sense is sufficiently developed.

X. Do not become the slave of routine or of one inflexible, mechanical, automatic system.

XI. Assign reasonable lessons suited to the capacity, not of the *best*, but of the average pupils.

XII. "Always remember that to educate rightly is not a simple and easy thing; but a complex and extremely difficult thing, the hardest task upon adult life."

—*Herbert Spencer.*

APPENDIX B.

I. GENERAL INSTRUCTIONS TO PRINCIPALS AND TEACHERS.

In the course of study, detailed methods are left to the individual tact and skill of the teacher. Certain results are required; but it is not expected that all will reach those results in exactly the same way. The text books are an aid to teachers, but are subordinate to skillful teaching.

II. DIVISIONS, CLASSES AND RECITATIONS.

Each class may be advantageously divided into two sections for the purpose of recitation; but the discretion of the teacher must be exercised as to what recitations this division shall include. In memorized lessons, such as geography, history and word analysis, a class can, sometimes, with advantage be divided into sections of ten or twenty each, thus allowing most of the class to study while the few are reciting. In other lessons, as arithmetic and grammar, the undivided attention of the entire class is needed.

Every teacher should have an established order of exercises, which may be changed during the year according to the circumstances of the class. No uniform rule can be established respecting the frequency or length of recitations. Some part of the time each day must be allowed for study; but the amount to be given depends upon the character of the recitation. When a class is not divided into sections, the entire class must be allowed time for study, and taught how to study.

III. RECITATIONS AND USE OF TEXT BOOKS.

The aim of teachers in conducting recitations should be to ascertain if their pupils have given reasonable attention to lessons assigned for study, and to supplement the text book lessons with such illustrations and explanations as are necessary to a clear understanding of the subject.

The arrangement of lessons in text books is far from perfect, and the teacher must constantly exercise a wise discrimination, both in assigning lessons and in omitting unimportant matter. In geography, while the whole may be read with open book, not more than a small fraction at most, of the matter in each one of the text books used, ought to be memorized. The important points should be marked in every advanced lesson assigned for study; otherwise the mind of the child is burdened with too many details. In history, while the whole should be read in the class, but very little should be marked for memorizing. In grammar, as a general rule, the notes and exceptions in fine print should be *read*, and not memorized. The Readers should be used as most valuable aids in composition, grammar and spelling. Recitation records may be kept; but it is by no means desirable that every recitation should be recorded.

Frequently the recitation of an assigned lesson should be brief, the principal part of the time being devoted to explanations and illustrations by the teacher. A written review, on Friday, will frequently afford the best standard of work during the week. It is not desirable that teachers be made recording clerks for pupils.

While recitations in history, geography and grammar may sometimes be conducted in writing, teachers are cautioned against a neglect of oral recitations.

Teachers are expected to explain each new lesson assigned, so that each pupil may know what he is expected to do at the next recitation and how it is to be done. Rules and definitions should be plain, simple and concise ; and if deduced by pupils and teachers from the exercises, are more valuable than if memorized from the book. Teachers should never proceed with a recitation without the attention of the whole class. Simultaneous recitation should not be resorted to, except for the purpose of giving occasional variety to exercises, of arousing and exciting the class when dull and drowsy, of aiding to fix in the mind important definitions, tables, etc., and also in certain spelling and elocutionary exercises.

IV. ARITHMETIC.

One great object of the study of arithmetic is mental discipline. To secure this, it is better that the class should work under the immediate direction of the teacher. Hence the regulations forbidding teachers in certain grades to assign any arithmethic lessons to be learned at home.

One hour a day will be sufficient to complete the course in each grade. The blackboards should be kept in constant use both by teachers and pupils.

Accuracy, rather than quickness, should be the rule. The pupil should be taught the principle underlying every process in the fundamental rules of arithmetic. It is easier for the time to teach the child to place the units under units and tens under tens; but the principle that obtains everywhere, in simple and compound numbers and decimals, is to place numbers of the same denomination under each other for addition.

It is easier to say " begin at the right hand column," but the *principle* is—begin at the lowest denomination. It is easier to say " write the right hand figure and carry the left hand figure to the next column;" but the principle is—to reduce the number to the next higher denomination, placing the remainder under the column added, since it is of the same denomination. The same principle runs through compound numbers. These hints apply to subtraction, multiplication and division.

In multiplying 12 by $\frac{3}{4}$, a rule may be given to multiply the whole number by the numerator and divide the product by the denominator, but it is a better method to say that multiplying 12 by $\frac{3}{4}$ is taking three-fourths of 12; divide 12 by 4 to find $\frac{1}{4}$, which is 3, and multiply 3 by 3 to find $\frac{3}{4}$, and the same in other operations with fractions.

V. GRAMMAR.

The study of language, though it is the most difficult of all the school studies, ought to be the most interesting. A skillful teacher can make it so. The omission of many of the technical formulas of the text books, now almost obsolete; the practical application of principles in composition; the continued use of reading lessons, supplemented by the living teacher, will make grammar both useful and interesting.

VI. GEOGRAPHY.

The Elementary Geography is a book to be read and studied with open book in the class, rather than to be memorized. The mere pronunciation of names is a difficult task for young pupils. When teachers consider that the book contains more of detail than most adult heads can carry, they will perceive the necessity of exercising common sense in the use of the book. One fourth of the questions, selecting the more important, will be more than enough to be memorized.

VII. WRITING.

In writing-lessons teachers should make use of the blackboard, all the members of the class attending to the same thing at the same time. Important letters and principles of the copy should be written on the board, both correctly and incorrectly, to illustrate errors and excellencies.

In the first lessons on the slate, the teacher should begin with easy words, including the simpler small letters and easy capitals. The teacher will find that children can learn to make easy capital letters quite as readily as small letters. Attention should constantly be called to the relative proportions of letters. When pupils begin to write with a pen especial attention must be given to the manner of holding it, as a bad habit formed in the first year is corrected afterwards with great difficulty. The skillful teacher will not be confined to the order of copies in the several numbers of the authorized copy books. In the grammar grades specimens of writing should be required and credited monthly.

VIII. SPELLING.

Good spelling is an unmistakable sign of culture, and bad spelling of the lack of it.

The orthography of the English language is so difficult that it must receive a large share of the time and practice in any course of instruction and in every grade. The spelling book is only an aid to good spelling; the main reliance for forming a habit of correct spelling must be on the reading lessons, compositions and other written exercises as provided throughout the course. Written spelling is more valuable than oral, yet the former must not be used exclusively. Both the eye and the ear must lend their aid.

In oral spelling permit but one trial on a word. No assistance whatever should be given to pupils by pronouncing syllables or by mispronouncing words to indicate the spelling. Pupils should be required to pronounce each word distinctly, after it is dictated by the teacher. Pronounce every word distinctly, in a natural tone of voice. The thundering volume of the old-fashioned "spelling-tone" adds nothing to the effect of a lesson in orthography.

IX. COMPOSITION.

Exercises in writing compositions constitute the most practical part of grammar.

Copying reading lessons from the open book will be found a valuable aid as an exercise in spelling, punctuation, the use of capitals and divisions of paragraphs. These should be followed by written abstracts of easy reading lessons from memory.

No exercise is more important than that of letter writing. Particular attention should be given to the form of beginning and ending; the date; paragraphs; margin; folding; superscription; sealing, etc.

If composition exercises are given frequently, it will be impossible for the teacher to perform the drudgery of correcting

Pupils should therefore be required to exchange exercises and correct them in the class, under the direction of the teacher. The exercise of criticism in correcting compositions is quite as valuable to the pupil as the original one of writing them. All corrected compositions should be recopied in a small blank-book.

X. Good Language.

The correct use of language is a matter of *habit* rather than of technical study of the rules of grammar.

It will be one of the arduous duties of every teacher, whether in high or low grade classes, to correct, daily, the inaccuracies of speech resulting from bad habits of pronunciation and in the use of language. The teacher should use plain and pure English, and require pupils to do the same. No provincialisms, no slang, no careless or slovenly pronunciation, should be allowed to pass unnoticed. Questions should be direct; answers, concise. Every answer should be a complete sentence.

The exercise of good principles confirmed into habit is the true means of forming a good character. The moral faculties, like the intellectual, need daily development from the feeble germs of childhood. Children do not learn arithmetic and grammar merely by repeating rules and formulas; neither will they appreciate and assimilate the foundation principles of right and wrong as rules of action merely by the process repeating mottoes and maxims. The moral faculties are of slow growth; they need daily culture and exercise until the habit of right thinking and right doing is formed. There are evil tendencies in the child's nature to be repressed; there are germs of good qualities to be warmed into life and quickened in their growth; and this is the work of skillful teachers during many years of school life.

The selfishness of children is the greatest obstacle to moral training. To teach self-denial and self-control must be the constant care of the teacher. Every case of quarreling, cruelty, fraud, profanity and vulgarity, should be made the occasion of a moral lesson.

Good manners are intimately connected with good morals, and, teachers should improve every opportunity to teach civility and courtesy. In the Primary schools teachers should give particular instruction in the common rules of politeness. The manners of children in their intercourse with schoolmates should receive constant attention. The position of the pupil in his seat, his movements in and out of the room, his manner of reciting, should all be carefully noticed.

No teachers can expect to make their pupils more civil or more courteous than they show themselves to be. In dress and in manner, they must *be* what they would have their pupils *become.*

APPENDIX C.

Kindergarten Work.

RECEIVING CLASS—FIRST QUARTER.

1. Gift work. In colored worsted balls.

Purpose of exercises:

To stimulate observation.

To lead children to express clearly the impression received through sight and touch.

To classify familiar things under certain essential qualities, as form, color, etc.

Points to be brought out:

1. Form. Ball; (round in every way, round all over) see Kindergarten Notes. Have children find and name things of this form seen in the room. Have them recall objects of this form found elsewhere.

2. Color. Red, yellow, blue, orange, green and purple, (see Kindergarten Notes, color exercises.) Show by simple devices the formation of orange, green and purple. Use gelatine films, dyes, paints, etc., etc. Busy work. Assort colors; use sticks and tablets. Review. Test children in various ways to see if they are perfectly familiar with color and color-names. Tell story, " Color Fairies." Repeat or sing, "We the Primary Colors Are." Show colors, if possible, with prism to recall rainbow. Have an imaginary rainbow party, having children name the flower or fruit they would contribute. Have all the six colors represented. Name and indicate colors with strings of wooden beads.

3. Motion, direction, position.

Action of ball shown—roll, stand, bounce. Through the movements of ball, free or suspended by string, arrive at the terms: Side to side, right—left, front—back, up—down, over—under, across, etc. Have children name things which move in these directions—e. g.—window, curtain, elevator, etc., up and down. Give various exercises to bring out these terms, as children should have a clear understanding of them in order to follow directions in later work. Have ball placed in center of desk at right side, left, etc. (Distribute all the balls; those not having one, indicate with hand.) Name and indicate right side of body, right shoulder, etc., right side of room, picture, blackboard, etc., then left side, etc.

Lead up to vertical and horizontal, using, at first, the terms standing or upright; lying down or level.

Name things in these positions.

4. Material. Worsted; lead up to wool, from what obtained, quality, etc. Repeat, "This is the Meadow."

NOTE.—In all the exercises be ready with timely suggestions in order to keep the children's interest excited and their curiosity aroused. Use stories as a means. Play "The Thought" game, having the children name what you describe. Excellent suggestions can be obtained from Partridge's "Quincy Methods." Encourage children to look for things which bear upon the subject under discussion, outside of school hours, and repeat at next exercise. Give short exercises, and often. When they cannot recall some point, or do not seem to know what you have repeatedly hinted at, ask them to inquire of some one at home.

5. Occupation work to supplement, and accompany the work with gift.

Exact clean hands and neat work.

RECEIVING CLASS—SECOND QUARTER.

I. SECOND GIFT—(See Kindergarten notes).

1. Comparison of worsted ball and wooden sphere:
   (*a*) Resemblances.

(*b*) Differences, found by pupils *handling, grasping* and *viewing* objects.

2. Comparison of *sphere* and *cube* :

(*a*) Resemblances.

(*b*) Differences with regard to action and form.

3. Comparison of sphere, cube and cylinder, in regard to action. Wooden heads used to distinguish the *three* forms. Objects noted and recalled of like form.

4. Stress laid upon *cube,* its action and number of faces, corners and edges. Let children make *shape* of face in air, on blackboard or slate, and with sticks.

Stick work :

(*a*) Dictation with one long stick, vertical, horizontal and slanting positions. Objects in like positions noted and recalled. Attention called to *place* of *ends* in each position.

(*b*) Two sticks (of two colors) placed in different positions with regard to each other—touching, apart, end to end, etc.

(*c*) Three sticks, combined positions.

(*d*) Four sticks, combined positions.

Refer to *color* in all exercises.

Busy work for any number of sticks :

Sticks (1 or 2 in.) placed vertically, in rows, apart, equal spaces.

Sticks (1 or 2 in.) placed horizontally, in rows, apart, equal spaces.

Sticks (2 in.) placed end to end, in rows, forming square corner.

Sticks (4 in.) placed end to end, in rows, forming squares.

5. Free work allowed at end of exercises.

NOTE.—For convenience in distributing and collecting, sticks should be kept in small boxes, or else strapped with a rubber band.

RECEIVING CLASS—THIRD QUARTER.

II. Occupation Work.

1. Cylinder, special study:

Comparison with sphere in regard to faces (round, curved.)

Comparison with cube in regard, first, to flat sides: Square, round, like circle.

Comparison with cube in regard, second, to edges: (Straight, curved.)

Find and recall objects with curved sides; with side *like a* circle; with square sides; with straight edges; curved edges. Have various exercises to bring out clearly the distinguishing characteristics of the three forms.

Form study, interspersed with appropriate stories and songs.

2. Rings and half rings:

Rings—Relation of rings to sphere and cylinder noted.

Characteristics observed and noted.

Objects like ring named and recalled.

Note.—Draw from the children the facts about the material *iron,* and add in simple words to their store of knowledge.

Half rings—Two halves given in connection with whole ring to bring out the name.

Comparison with sticks and characteristics observed and noted. Objects like half ring named.

Position exercises—Half ring placed in four positions. Name for position developed in connection with whole ring, as placed to look like upper part of ring, lower part of ring, right side, left side.

Place of ends noted in each position, i. e., up, down, etc.

Compare with curving objects in like positions.

Develop *terms,* curving, upward, downward, etc.

Dictate positions two halves can assume to each other.

Dictation of simple symmetrical figures.

Simple forms of life outline.

3. Stick exercises continued :

Dictation of symmetrical figures and forms of life.

Busy work to bear upon work at hand.

RECEIVING CLASS—FOURTH QUARTER.

III. Occupations.

1. Gift work.

Work of the three quarters reviewed.

Ring and stick work combined.

APPENDIX D.

COURSE IN SEWING.

In schools for girls exclusively, the full course of sewing must be pursued.

In schools for boys exclusively, no sewing is required.

In mixed schools of boys and girls, sewing is required in primary grades. In the grammar grades of such schools, sewing is left optional with the Principal.

FIRST GRADE.

One lesson, one hour per week, or two lessons, one-half hour each per week, devoted to cutting, basting, overhand sewing and turning hems.

Explain the difference between selvedge and torn edge, and what a seam is.

MATERIALS FOR PUPILS.—Thimble, scissors, No. 8 needles, No. 50 thread, both red and white.

Suggestions—Pupils should learn to cut squares different dimensions accurately. This may be done by following the kindergarten folding, measuring with a ruler, or by following drawn threads.

Fold the cloth back from the right side to the wrong side, having the fold uniformly one-fourth of an inch in width. Place the right sides together, having the folded edges even. Baste from right to left, through the middle of the folds, in unequal stitches, the long stitches being on the side next the sewer. After pupils are able to cut and fold accurately, commence to sew from right to left, by holding the cloth between the thumb and the first finger of the left hand, never using a knot, but leaving an end of the thread one-half of an inch in length to be turned back on the seam and sewed under by the overhand stitches. At the end of the seam make no knot, but sew directly back four stitches and cut the thread. Smooth the seam with the back of the thumb nail or the thimble.

Squares of the same dimensions should be sewed together; first two squares, then four squares, then six, and then eight squares, being careful to place the corners of the squares together so that the diagonals of the squares will form one continuous line.

In overhanding stripes or plaids they must match to a thread. At first sew a white and a colored square together. When more than two squares are sewed together, white squares should be placed corner to corner, and colored squares corner to corner.

SECOND GRADE.

One hour or two half-hours per week.

Cutting work bias and overhanding the same, running plain seams and overcasting.

Explain the difference between warp and woof.

Suggestions—Cut work with greatest care, as in previous year.

Cutting bias is cutting on the diagonal of a square directly across the warp and woof or filling.

Allow one-half inch on two sides of a square for the diagonal seam. Sew four squares with diagonal or bias seams to form one larger square.

In running, place the edges evenly together, and baste on the line of the desired seam.

Run the seam close to the casting thread, on the side next the sewer, commencing on the right hand side, keeping the needle parallel with the cloth, taking up three and omitting two threads.

In overcasting take stitches one-half the width of the seam, over and over loosely, to confine the torn edge of the cloth. In overcasting, when there is a difference in the width of the ends, always commence at the wider end.

THIRD GRADE.

Turning hems, hemming, to-wit: narrow, wide and bias.

Suggestions—Turn a fold one-eighth of an inch, as in overhanding. Give the cloth a second fold the desired width of the hem. Narrow hems should be made as narrow as possible without fraying by use.

Measure wide hems with a card to keep them of uniform width.

Avoid stretching and puckering of hems. Always lay the hem with the thumb and finger. Avoid pinching the goods. In starting to hem make no knot; point the needle toward the right side, bringing the end of the thread not drawn through under the hem.

FOURTH GRADE.

Back stitching, running, felling, and sewing in cords and binding.

Suggestions—In back-stitching bring the needle through the goods three threads from the beginning of the seam, put the needle back three threads and under the cloth six threads forward, continuing in the same movement Seams for felling should be sewed with one back-stitch and two running stitches. In felling, commence at the wide end, having the edge of the cloth further from the sewer the widest. Turn over the wide edge of the hem, as in narrow hemming, making a flat seam.

Cords should first be basted in a bias fold before being sewed.

Always bind with a bias piece running on one side of the seam, and hemming on the other.

FIFTH GRADE.

Gathering and laying of gathers. Patching square, triangular and circular patches.

Suggestions—In gathering, the seam should be one-fourth of an inch from the edge.

Divide the cloth into halves, and if the cloth is a long strip divide it into quarters. Always use a double thread with a small knot at the end, and having the thread longer than the piece to be sewed. To gather take up three stitches and skip five. Draw the thread through the material, pushing it tightly against the knot, and fasten the thread by winding it without knots around a pin placed in the material to be gathered. Lay each gather, using a coarse needle and holding the cloth between the thumb and first finger of the left hand.

Gathers may be hemmed, back-stitched or overhanded to the garment. If overhanded, the edge must be turned down before gathering, and the cloth gathered close to the edge of the fold.

Patches may be put in by overhanding, hemming or running.

SIXTH GRADE.

Making button-holes, eyelets, thread eyes, and sewing on all kinds of buttons.

Suggestions—Cut the button-hole the width of the button Button-holes should be barred and overcast. In cutting button-holes, cut away from the folded edge. Commence to work the button-hole at the end farthest from the folded edge, placing the needle through the cloth, looping the thread over the needle and drawing the needle so as to bring the twist on the edge of the button-hole. In sewing on buttons put the knot on the upper side. Eyelets may be worked as button-holes or overhanded.

SEVENTH GRADE.

Hemstitching, drawn work, in simple form, darning of all kinds.

EIGHTH GRADE.

Sewing optional.

APPENDIX E.

MUSIC.

RECEIVING CLASS.

Kindergarten motion songs at least twice each day.

Careful attention given to the pitch, rhythm, quality of tone, and position of the body.

All songs and exercises are to be kept within range of pupils' voices.

Frequently change the key in order to rest the voice and secure uniformity.

FIRST GRADE.

Singing at least twice each day.

Motion songs and other easy and pleasing rote songs.

Scale: forward and backward, using syllables and numerals, and beginning with full breath.

Frequently change the key in order to rest the voice, omitting such sounds as may in the least strain pupils' voices.

SECOND GRADE.

Singing at least twice each day.

Use Loomis' Reader, Book I, through chapter V. (Book in hands of teacher only.)

Careful attention given to time, rhythm, quality of tone, and position of body.

Drill thoroughly on tones, the scale and scale intervals.

Teach four new primary songs and one patriotic song.

THIRD GRADE.

Singing at least twice each day.

Use Loomis' Reader, Book I. Begin Chapter VI, finish book.

Practice daily on scale, with full breath, soft tone, and articulating syllable names properly.

Scale exercises by skips, using numeral and syllable names.

Exercises in sight reading from blackboard and music readers.

Rhythm, quality of tone, and position of body, to receive special attention.

Teach two patriotic songs and three other selections.

FOURTH GRADE.

Singing at least fifteen minutes daily.

Use Loomis' Reader, Book II, through Chapter V.

Practice daily on scale with full breath, soft tone, and careful pronunciation of syllable names.

Scale exercises by skips in all possible combinations.

Review terms used in Book I, as: tones, notes, syllables, measure, bar, beating time, lines and spaces, rests, staff, scale, double bar and degrees.

Rhythm, quality of voice, and position of body, to receive special attention.

Three new songs selected by the teacher and three patriotic songs.

Exercises in sight reading from blackboard and music readers.

FIFTH GRADE.

Singing at least fifteen minutes daily.

Use Loomis' Reader, Book II. Begin Chapter VI, finish book.

Continue scale exercises, making more difficult skips.

Lines and spaces on soprano staff. Explain characters and signs used.

Simple exercises in trio-part music.

Sight reading from charts and music readers.

Continue to give careful attention to rhythm, quality of tone, and position of body.

Three patriotic songs, and three appropriate songs, selected by the teacher.

SIXTH GRADE.

Singing at least fifteen minutes daily.

Use Loomis' Reader, Book III, through Chapter V.

Exercises in scale skips in all possible positions.

Exercises in two-part music, with frequent changes of part.

Sight reading from charts and music readers.

Musical fractions (time), in general use explained.

Continue to give attention to rhythm, quality of tone, and position of body.

Three patriotic songs, and three other appropriate songs, selected by teacher.

SEVENTH GRADE.

Singing at least fifteen minutes daily.

Use Loomis' Reader, Book III, through Chapters VI, VII and VIII.

Practice of scale intervals in the different major keys.

Exercises in two-part music, with frequent changes of part.

Review sight reading of elementary music, and transpositions of major scales.

Continue to give special attention to rhythm, quality of tone, and position of body.

Three patriotic songs, and three appropriate songs, selected by the teacher.

EIGHTH GRADE.

Singing at least fifteen minutes daily.

Use Loomis' Reader, Book III. Begin Chapter IX; finish book.

Review singing by note in all the different major keys.

Review occasionally questions in Chapter VII.

Practice daily on vertical scale, finding new keys by singing from C (Do) to first letter of new scale, and calling that letter I (Do), of the new scale.

Practice of scale intervals in all of the different major keys.

Exercises in triads of the major scale.

Sight reading from music readers.

At least three patriotic songs and three appropriate selections by teacher.

Continue to give attention to rhythm, quality of tone, and position of body.

APPENDIX F.

COURSE OF DRAWING.

In the receiving class, teachers will use the simplest exercises in kindergarten drawing.

In first grade classes, teachers will act under the general suggestions made in the Course of Study for the first grades.

In other grades, the Bradfield drawing blanks will be used, beginning with Blank No. 1 for the second grade, No. 2 for the third grade, and so on, up to the eighth grade, in which No. 7 will be used.

Whatever is good in these books, teachers will make available; but a wide latitude will be allowed both to principals and teachers who can improve on the specified work.

In any schools where there are any teachers that excel in drawing, principals are authorized to assign such teachers to take charge of drawing classes.

Two lessons each week must be giving in drawing, and three in penmanship.

APPENDIX G.

Penmanship.

In the receiving classes and the first grade classes, no copy-book is required.

In the second grades if a copy-book is used, it must be the Spencerian, No. 2; in the third grade, No. 3; and so on, up to the sixth grade, in which No. 6 must be used.

In the seventh and eighth grades no copy-book need be used, unless the class teacher should find it necessary to use one.

At least three lessons in penmanship must be given each week, and two lessons in drawing.

The Spencerian copy-books used, beginning with No. 2 in second grade, No. 3 in the third grade, and so on.

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COURSE OF STUDY

Public Schools

San Francisco, California
1897

COURSE OF STUDY

IN THE

PUBLIC SCHOOLS

OF

San Francisco, California,

1897-1898.

Course for Primary and Grammar Grades prepared by the Superintendent;
for High, Normal, and Evening Schools, by Principals.

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INTRODUCTORY.

THIS Course of Study has been prepared with the expectation that teachers will study and follow it carefully. It is presumed that they will familiarize themselves with the details, not only of their own, but, at least, of the next higher and the next lower grade.

The aim is, first: To offer suggestions in teaching intended as hints rather than as rules, each teacher being expected to keep informed on methods contained in books and journals on pedagogics, and to select or originate the particular plans by which he can best secure the advancement of the class. Second: To outline strictly the work that must be accomplished by each grade in each term of the year, to have the essential studies, as defined by law, so taught that pupils completing the course of the primary and grammar schools may be able to read well, to compose a letter grammatically and in good form, to write legibly, to spell ordinary words correctly, and to use figures accurately and with reasonable rapidity in arithmetical computations; that, furthermore, they may conduct themselves honorably and with propriety, be possessed of some knowledge of the world, their country, and themselves, and be imbued with patriotism and civic pride.

It is certainly better that boys and girls leave school with strength, accuracy, and confidence in fewer branches than to attempt the elaboration of many and be weak in everything. By weakness in everything is meant not merely feebleness in the subjects studied, but in those moral and intellectual factors,—thoroughness, honesty, the cultivation of correct conceptions of what work is, and careful, definite methods of thought.

The common sense, devotion, and enthusiasm of our teachers are relied on to secure these results.

In response to a circular sent from the office of the Superintendent last term, principals and teachers of the School Department of San Francisco gave very freely, in many cases, their views concerning certain, to them, grave defects in the "Course of Study."

In the regular High Schools it was thought that, owing to the demands of the University, in its conditions for admission of students, and because of the high standards of advanced communities in the East and elsewhere, the time for the completion of their work should be extended. Therefore, this manual provides for four years in the High Schools. In the Polytechnic High School, which includes the old Commercial High School, other changes in the course will be observed.

In the responses to the circulars mentioned, recommendation was made that the work be recast for one year less of time in primary and grammar schools. This manual therefore divides the work of the common schools as follows:

Primary School Course..............	4 years.
Grammar School Course.............	4 "
High School Course	4 "

While pupils will, in future, pass from the eighth grade to the High Schools, an advanced eighth grade will take the place of the former ninth, and have two special purposes: First, to receive those from the eighth who need or may wish better preparation for the High Schools; second, to give a year's special training for commercial, mechanical, or other of the active occupations in which youth may begin wage-earning or business careers. This department is especially demanded by that portion of the public who, while unable to send to any high or technical school, can by virtue of proximity to the grammar school maintain their children another year at their studies.

Principals and teachers actually engaged in the work are the real judges of what can be done in school by the children. To them all must defer. They now undertake to complete the conventional primary and grammar school course on lines suggested by themselves, as expressed in responses to a circular issued by the Superintendent. Another circular of the same character will be issued at a corresponding date the ensuing year.

Should a test of the work herein prescribed prove the advisability of any variation during the year, the changes can be made by special circular.

It is not expected that school work which is shown by the records to have been gradually deteriorating for years, till it is from one to two years behind that of Eastern cities and neighboring counties, can be brought up to standard in one year without great skill and effort.

The definite course requested has in this manual been granted, and the greater portion of time given to the *fundamental* branches.

Carpentery, sewing and cooking classes, not being general, and having special teachers, no course for these branches is given in this book.

In one primary and grammar school modern languages are taught, but the necessity for a special program here is not apparent.

There is a special teacher of physical culture, who supplies his own program to the classes.

A special teacher of history gives stereopticon views, the time not requiring a place in this manual.

In the near future circulars from Superintendent will schedule the work of special teachers.

Pupils attending the High Schools last year, and those entering from the ninth grades this year, will be permitted to finish the course, under the regulations, in three years from date of entrance.

While the text-books in this course are not in all cases what they should be, the wisdom of the teachers will simplify and adjust all difficulties. We must make the best of what we have, as no others are permitted by State or City.

As the principles first enunciated by Frœbel should lie at the base of all elementary school work, teachers should study and work by them.

In preparing this work the reports of the Committees of Ten and Fifteen and of the United States Commissioner of Education have been carefully considered.

TEACHER'S SELF-EXAMINATION.

These questions, prepared by the State Superintendent of Schools of Maine, to assist Superintendents in grading teachers, are admirably adapted for self-examination of teachers:

1. Has she the instincts and tact of a teacher?
2. Did she seem to be familiar with the work required of her classes?
3. Did she seem to have made suitable preparation for the recitation?
4. Had she some definite plan of work?
5. Did she secure the individual attention of her pupils?
6. Did she teach more than was in the text-book?
7. Did she use the facts and objects with which the children were familiar to emphasize the essential points of the lesson, and to illustrate principles studied?
8. Were her statements clear and accurate?
9. Was her manner decided? . . . inspiring? . . controlling? . . . forceful?
10. Did her questions follow each other in a logical order?
11. Was her method of questioning effective?
12. Did she lead the children to discover their errors?
13. Did the work done seem to promise the best results?
14. Were her explanations suited to the abilities and advancement of her pupils?
15. Were the important points of the lesson fully developed and carefully summarized at the close of the recitation?
16. Did her teaching tend to make thinkers or machines?
17. Were the pupils taught how to draw conclusions from facts learned?
18. Did her questions include the answers desired?
19. Did she suggest by words or tones the answers required?
20. Did she assist her pupils to such an extent as to make them dependent upon her?
21. Did they answer questions with the rising inflection?
22. Were they allowed to guess at answers?
23. Did their answers take the form of questions?
24. Did the teacher seem to be governed by the idea that it was her principal business to hear recitations?

25. Did she stimulate her pupils by asking suggestive questions?
26. Did she encourage helpful discussions?
27. Did she thoroughly verify and test the pupils' ideas of the statements made and the definitions given?
28. Did her questions show an intelligent and ample grasp of the topic?
29. Did the pupils thoroughly prepare their lessons before coming to the recitation?
30. Did she have suitable work prepared and assigned to those who were not reciting?
31. Were those who were not reciting studying?
32. Were all the members of the class giving attention to the work of the recitation?
33. Was her instruction interesting enough to deserve attention?
34. Did she "clinch" some point during the recitation?
35. Did she make the recitation accomplish all it was capable of doing for her pupils?
36. Did she use effectively the facts that are naturally tributary to the lesson?
37. Did she, to a reasonable extent, go back to the first principles of the work being done?
38. Were oral reviews a part of the regular exercises of the school?
39. Did they include only the essential facts and principles studied?
40. Did she use anniversaries, facts, incidents, and current events to illustrate and simplify the work of the text-books?
41. Can her pupils apply, in a practical way, what they learn from books?
42. Does she devise and adapt her methods, select the facts she teaches, and arrange the materials she uses?
43. Is her work in these particulars characterized by good taste and sound judgment?
44. Did her pupils know how to think?
45. Did she have exercises in the pronunciation of words?
46. Did her pupils use good English? . . . are they skillful talkers?
47. Do they know what they should about the soil of this section? . . . plants? . . rocks? . . . animals? . . . about their town? . . . county? . . . State? . . . about famous men? . . . great and current events?
48. Were inaccuracies in oral and written language corrected?
49. Were important points frequently reviewed?
50. In reviews, were the questions so worded as to require the pupils to think, and use their own words in their answers?
51. Were her questions brief and searching?
52. Were her recitations so conducted as to develop thought?
53. Did she dispatch the details of her work expeditiously and quietly?
54. Did she secure promptness, accuracy, and brevity in her recitations?
55. Were the tones of the teacher and pupils natural and pleasant?
56. Were her pupils respectful and courteous?

57. Did they seem to make progress in their studies?
58. Was the teacher too talkative?
59. Did the teacher appear to question only the brighter pupils?
60. Did the teacher address her questions to the whole class?
61. Did she indulge in repeating the pupil's answer?
62. Did she say or do anything which the pupils might have said or done themselves?
63. Were they urged to prepare simple apparatus to illustrate principles studied?
64. Were they energetic, self-reliant, and progressive?
65. Did they stand, sit, and walk properly?
66. In her intercourse with her pupils, was she careful in her manner, tone and words?
67. Did her puplls give parrot-like or intelligent analysis in arithmetic?
68. Did they analyze the problems or state the process used in the work?
69. Were fractions so taught that they could be readily used in interest and percentage?
70. Were the pupils rapid and accurate in mental work in arithmetic?
71. Did she try to teach the cause and relation of facts studied?
72. Did she possess the power that comes from serenity?
73. Did she ignore faults and irregularities?
74. Was the class quiet? . . . diligent?
75. Was the order in passing to recitations, in the lines, and in handling books and apparatus, satisfactory.
76. Was the teacher just in praising? . . . in reprimanding?
77. Did she have control of herself?
78. Was order maintained by harsh measures?
79. Was she kind and firm in her treatment of her pupils?
80. Did she rule by will power or by inspiring self-control?
81. Did the discipline of the school influence the pupils helpfully outside of the schoolroom?
82. Was the moral atmosphere of the school wholesome?
83. Were the relations existing between the teacher and pupils kindly and intimate?
84. Did the pupils obey promptly? . . . cheerfully?
85. What was the temperature? . . . atmosphere?
86. Was the schoolroom tidy and attractive?
87. Was the work on the board and slates neatly done and arranged.
88. Were the pupils allowed to injure the text-books or other school property?
89. Were they alert and interested?
90. Did she infuse life and energy into the pupils and the work of the school?
91. Did she seem to be buried in her text-book?
92. Did she bring some new idea into each recitation?
93. Did she encourage her pupils to read the books, papers, and magazines found at home and in the school?

94. Did she test their knowledge of what they had read?
95. Did the pupils read with good expression?
96. Did they speak in clear, distinct tones, and in a prompt and decided manner?
97. Were they allowed to read without comment or suggestion?
98. Was the amount of text read too great?
99. Was there enough time spent in studying the thought or the selection read?
100. Were the pupils required to re-read a paragraph until they read it acceptably?
101. Were mistakes in pronunciation and emphasis left uncorrected?
102. Were mumbling, drawling, slurring tones permitted?
103. Did the pupils recite words or ideas?
104. Did the teaching tend to develop the power of concentration? . . . memory? . . . attention? . . . application?
105. Did it tend to develop the power to see things in all their parts and relations? . . . to grasp and analyze ideas?
106. Did the younger pupils recite frequently enough?
107. Did the teacher have some definite object to accomplish by each lesson?
108. Did she have some definite way of accomplishing it?
109. Did her pupils master the work attempted, and state clearly their ideas?
110. Were their answers indefinite or incomplete?
111. Did they use the words and sentences that expressed in the briefest and clearest manner the correct answers?
112. Did they understand the words used?
113. Were they required to work?
114. Were the pupils told to do or taught how to do the work required of them?
115. Are the pupils' vocabularies large and well selected?
116. In the assignment of lessons did the teacher indicate that she had made a study of the abilities and needs of her pupils and of the text assigned?
117. Has she a special line of study or investigation not directly connected with school work?
118. Has she read some of the standard works of education? . . . in general literature?
119. Does she read regularly an educational periodical?
120. Is she instinctively a student?
121. Is her knowledge of the "common English branches" broad and accurate?
122. Is she energetic? . . . enthusiastic? . . . progressive?
123. Can she devise? . . . execute?
124. Is she up with the times in thought? . . . reading?
125. Is she interested in her work? . . . in her pupils as individuals?

126. Does she inspire her pupils and exert an influence for good over them because of the quality of her personality?
127. Is she interested in the best interests of the community?
128. Did she spend much time on non-essentials?
129. Did she economize the time and energy of her pupils, by properly grouping the facts that should be considered together?
130. Did she put her best efforts into teaching the important topics?
131. Was the work on the chart satisfactory? . . . in oral combinations in number? . . . general exercises? . . . reviews? . . . phonics? . . . synonyms? . . . analysis of words?
132. Could the pupils give the reasons why the statements made by them are true?
133. Was the recitation a means of making their information more definite and extensive?
134. Did they study about things, or study the things themselves?
135. Was each lesson so taught as to justify the teacher in feeling that something had been accomplished, something done?
136. Did she use her own and her pupils' time and energies to the best advantage?
137. Did her influence and teaching tend to make pupils thoughtful? . . . considerate? . . . gentle? . . . generous? . . . erect and graceful in carriage? . . . courteous in manner? . . . unselfish? . . . trustworthy?
138. Did she appeal to the best motives in her efforts to control or influence her pupils?
139. Did she have the power of holding them to their work and good behavior without a visible effort?
140. Did her teaching tend to develop the best qualities and abilities of her pupils?
141. Are they doing more and better work than last term?
142. Did she have the faculty of inducing them to voluntarily put forth their best efforts?
143. Does she familiarize herself with what her pupils have done in the preceding classes?
144. Does she know and properly appreciate what they are to do in the higher classes?
145. Is her work a continuation of what precedes, and does it best prepare the pupils for what follows?
146. Did she use good English?
147. Did her sentences clearly express her ideas?
148. Were her pupils impressed and influenced by what she said?
149. Do they dawdle?
150. Does the teaching tend to help them to use their faculties naturally, and at the time of their greatest natural activity?
151. Could they see things with their intellectual eyes?
152. Could they use books and facts, or were they burdened by them?

153. Did they do enough in a given time?
154. Did she have the faculty of inducing her pupils to work out the solutions of questions for themselves?
155. Was enough time spent in drill exercises?
156. Did she "pump" the lesson out of her pupils by using leading questions?
157. Did they understand the connection and relation of facts recited?
158. Does her teaching tend to encourage pupils to accumulate facts or to develop strength?
159. Have her pupils read some of the English classics?
160. Have they memorized some standard selections? . . . short quotations?
161. Did her teaching develop love of country, and a just regard for our best men and women?
162. In what did she excel as a teacher?
163. In what was she weak?
164. In what were the pupils specially proficient?
165. In what were they particularly deficient?
166. Does she study the methods of other teachers?
167. Is she persistent in her efforts to learn the best methods?
168. Is she fertile in giving variety to her work?
169. Does she act on suggestions made to her?
170. Is she a better teacher than she was last term?

PRINCIPALS

Are directed as follows:

To see that the Course of Study, the Rules of the Board and the State Laws with reference to the schools are complied with.

To keep an inventory of all the books, apparatus, flags and supplies in the school.

To see that the registers are kept in uniform and orderly manner, and in ink.

To keep informed of the conduct of children on their way to and from school and in the yards. Particular care should be exercised that no child shall have cause of complaint of his fellows. The chalking of buildings, fences and sidewalks should be suppressed.

To confine examination questions to the limits of the instructions to teachers.

To see that the supply of books, maps, globes and apparatus is kept up, and used in the interest of objective or observation work.

To see that the provision for home lessons is complied with.

To co-operate in every endeavor to secure right intent and careful observation and execution from every pupil.

To impress the importance of drill, after thorough understanding of subjects taught, and review.

To protect classes against injudicious promotions, and to suppress unwise class requirements.

To permit temporary arrangements so that music and science may be assigned to the most expert teachers.

SPECIFIC DIRECTIONS TO TEACHERS.

Do not take it for granted that pupils know thoroughly the work of the preceding year. Wherever a weak point is found make it strong before advancing further.

Let the aim of all work be to make pupils observant, original, and self-reliant. Inculcate a habit of close observation and inquiry to the end that they acquire a fund of general information respecting the nature and use of objects which they see and use.

In all classes, above the fourth year, there should be a monthly written review on all leading subjects, occupying only the usual time of recitation in that subject, and should affect, but not control, the monthly report sent to parents.

Owing to transfers of pupils from school to school during term, one-fourth the work as here set forth for the year should be completed quarterly as nearly as topics will permit; *i. e.*, the first one-fourth of the work should be accomplished in the first quarter, etc.

Consult table elsewhere for amount of time for each subject; more than one section of class at discretion of teacher, but no more recitations are to be heard in a day than will permit of thorough mastery and drill on each; pupils are not to be hurried for the sake of touching each subject every day; consider only enough daily to permit of thorough, enthusiastic work.

Teach how to study, bearing in mind that the reasoning powers develop slowly.

Never permit a misspelled word to remain on the blackboard.

In reading, complete sentences are to be read without halting on part of pupil or interruption by the teacher.

Every teacher should endeavor to be a good blackboard writer.

Classes should have sufficient daily review and drill.

In place of supplementary reading in grammar grade classes teachers will make use of the school library. One method is to supply each pupil of the class with a book to be read at home and an estimate of it to be brought in as a composition in one week, a receipt having been taken for the book. This has been found to be very effective.

In all schools teachers may be assigned by the Principal to music classes according to their abilities in the subject. Schools not organized in music well enough to follow the course should make special efforts to bring the work up to grade at an early date. The voices of boys from thirteen to fifteen years of age inclusive, must not be strained.

Drill in elocution in all grades weekly. Public reading and speaking, parliamentary usage and debating, in upper grades, in connection with Civil Government.

A business letter and one commercial form, such as an order for goods, a bill or a receipt, from pupils to Principals, on report day, and one composition or letter of friendship to Principals between report days, spelling and punctuation to be especially attended to. These are intended for the inspection of the Principal, the teacher to attend to the marking and correction of the papers.

Calisthenic and breathing exercises, twice daily.

Good writing (not vertical) may be accepted in the seventh and eighth grades the present year, with consent of Principal.

By the placement of books, it will be noticed that drawing is not up to grade the present year. It is expected that it will be next year.

Practice the lesson on drawing paper before using the books. Use pencils that will not smut. The books are to be kept in order for inspection.

Dole's "The American Citizen" in hands of teachers of seventh and eighth grades.

In Physics the work is to be simplified from "Gage's Principles," "Avery's School," or any other standard book up to date.

Patriotism, morals, manners and humane instruction in all grades at a set time, weekly. Harr Wagner's "Patriotic Quotations" in hands of teacher, supplied at storeroom.

The day's exercises should begin with song. Appropriate selections will be found in the back part of the prescribed music books. Procure copies of "Hail, California," from the storeroom.

In the interests of humane education, prescribed by the Board, teachers may give lessons to the classes from Books I to IV, in second to fifth grades, of "Heart Culture."

Principal's examinations at close of term; Board examinations at end of year. Visits by Superintendent and Deputy during term.

Provide a time daily for individual instruction. This will be of especial benefit to ambitious pupils who are behind in their class work.

Many young teachers fail in discipline by a wrong conception of the principle of "ruling by love." Mutual esteem should exist throughout a school, among pupils and teachers and between all and the Principal; but it is a mistake to sacrifice a demand of obedience and good intent for fear of loss of good will; nor should the unworthy or unruly be placed in posts of honor to win good will. Opposite results from a class, always discriminating, might be expected.

In the grammar grades supplementary reading has been diminished, that reading may be better taught and literature more thoroughly analyzed.

In all grades defining must accompany spelling and reading.

Until forms in vertical writing are secured, Ward's Business Forms will be used by the teacher, vertical writing being required of the pupil.

Annual promotion of classes; but principals may promote deserving pupils and put back incapable pupils, after consulting with class teachers, at any time during the year, provided that maturity and physical development be carefully considered. See "Rules."

Should injury to desks or other annoyance occur where day and evening classes occupy the same room, the teachers should confer to fix responsibility.

Teachers are not to relax watchfulness over their classes by visiting associate teachers during session or by work on examination papers or registers. The closest attention to discipline is expected. [*Vide* "Rules."]

Correlation or concentration should be constantly in the mind of the teacher. For instance, no zealous teacher would fail to bring into the geography lessons facts from the history and science lessons, etc. Thermometry, barometry, etc., being discussed in the geography of the seventh grade, this manual provides for the correlation of physics by prescribing the physical treatment of dynamics of fluids and heat in the same grade. In geography, also, local conditions and current events will be drawn upon, that the pupil's stock of general information should be of constant growth and ready use.

That part of the State Law which pupils should know should be read from the register once each term.

In every recitation insist upon an erect position, distinct articulation, and correct expression.

Insist on all written work being done neatly, the pencils being sharp, and of sufficient length.

Books and papers should always be placed in good order in desks.

The use of pencil tablet paper is recommended in place of slates.

Corporal punishment shall not be administered in the High Schools, nor upon girls in any schools of the Department. Such punishment must be administered by Principals, by Vice-Principals having charge of boys' yards, or by teachers of primary classes, with consent of Principals, and shall only be resorted to in extreme cases, when other means fail to maintain obedience. No excessive, cruel or unusual punishment shall be allowed. Corporal punishment shall consist of the application of a strap to the palm of the hand. Rules of the Board, Sec. 92.

All modes of punishment calculated to degrade a pupil, and the use, on the part of any teacher, of discourteous language towards pupils or parents, are expressly forbidden. Sec. 89 of the Rules.

Every classroom should be supplied with a national flag, and the same should be saluted every morning. On Monday mornings the salute should be accompanied by the pledge: "I pledge allegiance to my flag and to the Republic for which it stands—one country, one people, one flag."

Avoid the use of irritating language. The sarcastic or irascible teacher is likely to have insolent pupils.

As far as possible avoid placing a pupil in a position in which he will be tempted to tell a falsehood.

Never threaten. A warning in the proper spirit may be given.

Give few commands, but enforce those made.

Make no rash promises, but keep those made.

Make the schoolroom attractive and pleasant.

Widest latitude to teachers in making up programs and following methods, but a copy of the program must be written in the register and another kept posted in the schoolroom.

Home work: Third grade, half hour; fourth, fifth and sixth grades, one hour; seventh and eighth grades, one and one-half hours.

The twenty minutes allowed for recess must include the time necessary for leaving and returning to rooms and all preparations and exercises incidental thereto. Preparations for dismissal must not be made till five minutes of the hour set for the same. (See "Rules of the Board.")

Teachers must keep a record of temperature according to directions contained in chart furnished for that purpose by the Health Committee of the Board of Education.

In all cases of doubt as to the best method of procedure in matters pertaining to the course of study or discipline, the advice of the Principal should be sought.

PRIMARY SCHOOLS.

Time, Four Years.

SCHEDULE.

FIRST YEAR (OR GRADE).

Oral Language.—Relate or read stories, illustrating kindness, gentleness, unselfishness, truthfulness, honesty, loyalty; natural history and geographical stories, etc.; lead the children to reproduce them, cultivating a ready and correct use of simple sentences; names of parts of body; care of body.

Written Language.—Copy simple exercises from the board and from the book to learn to capitalize, punctuate and spell by imitation.

Reading.—From blackboard and chart; first 39 lessons in State First Reader (revised), teachers to read preface.

Spelling.—Oral (phonic and literal) from reader.

Numbers.—Develop objectively all numbers from 1 to 10; counting and writing numbers from 1 to 50; State Primary Number Lessons to lesson 30 inclusive; use numeral frame and objects, such as pebbles, beans and grains of corn; 4 gills=1 pint, 2 pints=1 quart, 4 quarts=1 gallon, objectively; (secure the measures from the storeroom, through your Principal); 12 inches=1 foot (secure also a rule); 2 nickels=1 dime, 10 dimes=1 dollar, two halves=1 dollar, four quarters=1 dollar. Do the work according to Grube, in "Swett's Methods," page 196, etc., which is also found elsewhere in this manual.

Writing.—California Vertical No. 1 in hands of teachers; vertical to be used by the teacher in all school work; pupil to copy from blackboard and reader, and be taught from instructions in Writing Book No. 1. A bad habit formed here is likely to show through life.

Drawing.—Thompson's Freehand Drawing Book No. 1; pupil to copy also from blackboard, chart and reader, under instructions as laid down in drawing book.

Music.—Choice songs for children; suggestions from teacher after consulting Chart A, Natural Music System; training on the scale.

SECOND YEAR (OR GRADE).

Oral Language.—Reproduction of stories, as in the first year, with same object; cardinal points, seasons, night and day, etc.; organs of body; senses.

Written Language.—Abbreviations: Mr., Mrs., st., days of the week, names of the months, date, teacher's name, child's name and address; copy from reader.

Reading.—State First Reader completed; State Second Reader, first twenty lessons, teachers to read preface; memorizing and reciting; supplementary reading.

Spelling.—Oral (phonic and literal) and written from reader.

Numbers.—Review work of grade 1; counting and writing to 1,000; Roman, I to L; State Primary Number Lessons 31 to 70 inclusive; add, subtract by twos, threes, fours, fives to twenty; 12 inches=a foot, 3 feet=a yard; 10 mills=a cent, 10 cents=a dime, 10 dimes=a dollar, 10 dollars=an eagle; add, subtract, multiply and divide, first with objects, then with figures 1 to 10; time by clock; 16 ounces=a pound, 100 pounds=a cental (ctl.); children invent problems; drill in combinations of numbers.

Humane Education.—Heart Culture, Book I.

Writing.—California Vertical Book No. 1; accept nothing but careful work; see right foundation laid.

Drawing.—Thompson's Freehand Drawing Book No. 1. Being the second year in this book a correct foundation should be thoroughly built; close observation, correct methods and execution, good work; practice the lesson on drawing paper before using the book.

Music.—A thorough training on Chart A, Natural Music System; children's choice songs.

THIRD YEAR (OR GRADE).

Reading.—State Second Reader (revised) completed from lesson 21 inclusive; memorizing and reciting; supplementary reading. Definitions insisted upon.

Spelling.—Oral (phonic and literal); written, from reader; State Speller, first 20 lessons.

Language Lessons.—State Lessons in Language, first 34 lessons.

Numbers.—Writing and reading numbers to 1,000,000; Roman to C; State Primary Number Lessons completed from lesson 71 inclusive; review denominate numbers already given; metre=$39\frac{1}{3}$ inches; litre=about a quart; kilogram=$2\frac{1}{5}$ pounds; procure yard and metre rule and other necessary apparatus for teaching, *objectively*, from the storeroom, by requisition on your Principal; 60 seconds=1 minute, 60 minutes=1 hour, 24 hours=1 day; add and subtract by twos, threes, fours, fives and sixes to 50; comprehension of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$; division of unit into halves, thirds, fourths, sixths and twelfths, using 12-inch ruler or pieces of paper; reduce halves to fourths, sixths and twelfths; thirds to sixths, and sixths to twelfths. Add ten numbers of two and then three figures each; pupils originate oral problems illustrating their number work; do the work as per Grube, in "Swett's Methods."

Geography.—Map tracing as a means; draw plan of schoolroom and locate objects; observations of climate, as evaporation, condensation in cloud, mist, fog, dew, rain, hail, snow; in heat, temperature, sun at different times in the day and year; sun's position affecting temperature; effect on vegetation; notice soil, whether barren, sand, loam, gravel, clay; name and describe a few local trees, shrubs and flowers; some article manufactured in San Francisco, some article grown in the State; some article imported, and where from; city's limits; five important cities of the State; State and local government.

Rules of Health.—Simple talks; State Physiology in hands of teacher.

Humane Education.—Heart Culture, Book II.

Writing.—California Vertical Book No. 2; accept nothing but exact work, according to principles.

Drawing.—Thompson's Freehand Drawing Book No. 2; practice the lesson on drawing paper before drawing in the book.

Music.—Natural Music Primer to page 51, and training upon Chart B.

FOURTH YEAR (OR GRADE).

Reading.—State Third Reader (revised), teacher to read preface; memorizing and reciting. Definitions insisted upon.

Spelling.—From reader and other text-books; State Speller, lessons 21 to 100 inclusive.

Written Arithmetic.—State Advanced to page 62 inclusive; thoroughly review multiplication table to 12×12, and division table to 144÷12; at least three times a week, addition of twelve numbers of three figures each; accuracy, then rapidity; definitions of sum, difference, minuend, subtrahend, multiplicand, multiplier, dividend, divisor, quotient, remainder; review length, weight, liquid capacity, time, metre, litre, gram, kilogram; 16 ounces=1 pound, 100 pounds=1 cental (ctl.); 8 quarts=1 peck; thorough mastery of pages 55 and 56.

Mental Arithmetic.—Bailey's to page 35 inclusive, except page 13; accuracy, speed.

Geography.—State Elementary to page 62. Illustrate by and lay special stress on reference to local geographical features.

Language—State Lessons in Language, lessons 35 to 84 inclusive; letters; reproductions from science and nature stories; all compositions brief and accurate.

Rules of Health.—Short talks; State Physiology in hands of teacher.

Humane Education.—Heart Culture, Book III.

Writing.—California Vertical No. 3; accuracy; practice ovals with each lesson.

Drawing.—Thompson's Primary Freehand Drawing Book No. 3; model and object in hands of teacher. Practice the lessons on drawing paper before drawing in the book.

Music.—Natural Music Primer completed from 51, and Chart C.

GRAMMAR SCHOOLS.

Time, Four Years.

SCHEDULE.

FIFTH YEAR (OR GRADE).

Reading.—State Fourth Reader (revised) to lesson 45, page 108, teacher to carry out design expressed in the preface and to read pages 1–20, back of book; weekly practice on vocal training, pages X to XV; follow memorizing and notes at end of lessons; pupils to read piece silently, teacher making meanings clear; a few pupils may then be tried on bringing out the thought and the literary beauties; failing, the teacher reads entire piece in the best manner, conversing with the class on the treasures in it; none will be found without them; then pursue the usual routine of reading, analysis, spelling and defining by pupils. This book is one of the few readers calculated to develop a love and critical taste for good literature. A class of even the little ones of the fifth grade that does not pass to the sixth grade with fond expectations of the pursuit of this book to the close has not accomplished all that is designed.

Spelling, Defining and Sentence-Making.—From Reader and other text-books; State Speller, lessons 101 to 150 inclusive.

Word Analysis.—Swinton's, pages 5 to 18 inclusive, 23, 24, 25.

Language.—State Lessons in Language, pages 67 to lesson 7 on page 88, and part II, 28 lessons.

Composition.—Close attention to suggestions in language books.

Written Arithmetic.—State Advanced, pages 63 to 121 inclusive except exercise 142 and pages 116 to 118 inclusive. Metric system according to instructions in this manual.

Mental Arithmetic.—Bailey, pages 35 to 56 inclusive.

Business Forms.—Ward's No. 1, in hands of teacher. (See directions elsewhere in this pamphlet.)

Geography.—State Elementary completed from page 63 inclusive.

History.—From supplementary or library books; Columbus; Da Gama, Vespucci, Cortez, Pizzaro, Balboa, Magellan; Cabots, De Leon, Smith, Hudson, the Pilgrims.

Rules of Health.—Simple talks from State Physiology or the charts; importance of exercise; evils of over and insufficient exercise; effects of alcohol and tobacco on the heart.

Humane Education.—Heart Culture, Book IV.

Writing.—California Vertical No. 4.

Drawing.—Thompson's Primary Freehand No. 3. Being the second year on this book, accuracy of position of body, book and hand, closest observation, fidelity and best of results expected.

Music.—Natural Music Book No. 1, and Chart D.

SIXTH YEAR (OR GRADE).

Reading.—State Fourth Reader (revised) completed from page 108, teacher to be governed by instructions to teacher in fifth grade; work by lessons 248–254, State Grammar.

Spelling, Defining and Sentence-Making.—From Reader and other text-books; State Speller, lessons 151 to 250 inclusive.

Word Analysis.—Swinton, pages 5 to 40 inclusive and 125, 126; further drill on same roots in spelling and defining; note particularly words connected with the word analysis lessons as they occur in other studies.

Grammar and Composition.—State Advanced Grammar (revised), part 1, teacher to read the preface.

Written Arithmetic.—From page 122 to Circular Measure on page 146, omitting exercises 176, 178, 179 inclusive, 181, 182, 185; take Time, U. S. Money to problem 56; take pages 181 to 184 inclusive; 204 and 205. Metric System, according to instructions in this manual.

Mental Arithmetic.—Bailey, pages 57 to 65 inclusive; 81 and ordinary long measure table on 82; 84 and 85 and counting and paper tables on 86; 94 to 99 inclusive, omitting square and cubic measure; 101 and 102.

Business Forms.—Ward's No. 2, in hands of teacher. See instructions.

Geography.—State Advanced Geography, pages 43 to 89 inclusive.

History.—Harr Wagner's Pacific Coast History, complete; State U. S. History in hands of teacher, first 46 pages.

Health Lessons.—State Physiology, pages 151 to 224 inclusive.

Physics.—General properties of matter.

Writing.—California Vertical No. 5.

Drawing.—Thompson's Primary Freehand No. 4. One year being devoted to one small book, most excellent results are expected.

Music.—Second Music Reader, and Chart E.

SEVENTH YEAR (OR GRADE).

Reading and Literature.—Select American Classics; in connection with it, lessons 248 to 254 of the grammar. Drill according to pages x to xv of the Fourth reader.

Spelling, Defining and Sentence-Making.—From the Reader, Geography and other text-books; State Speller, lessons 251 to 350.

Word Analysis.—Swinton, pages 41 to 75; teacher to be governed further by instructions for sixth grade.

Grammar and Composition.—State Grammar, pages 99 to 194 inclusive, and review from beginning of book; teacher to read preface.

Written Arithmetic.—State Advanced; review factors and multiples; review pages 89 to 102 inclusive; pages 126 to 139 inclusive; tables on pages 154 to 167 inclusive; page 171, problems 56 to 65 inclusive; 181 to 213 inclusive; Metric System, according to instructions in this manual.

Mental Arithmetic.—Bailey, pages 66 to 122 inclusive, omitting apothecaries' weight and fluid measure.

Business Forms.—Ward's No. 3, in hands of teacher.

Geography.—State advanced, first 40 pages inclusive.

History.—State U. S. History to page 189.

Civil Government.—State Civil Government, pages 19 to 44 inclusive.

Health Lessons.—State Physiology, pages 7 to 82 inclusive; 225 to 236 inclusive.

Physics.—Dynamics of Fluids, Heat.

Writing.—California Vertical No. 6.

Drawing.—Thompson's Model and Object Book No. 1.

Music.—Natural Music Reader No. 3, and Chart F. (See instructions elsewhere.)

EIGHTH YEAR (OR GRADE).

Reading and Literature.—Brander Matthews' Introduction to American Literature, teacher to follow the spirit of the preface; work by lessons 248 to 254 of State Grammar (revised). See note in fifth grade.

Spelling, Defining and Sentence-Making.—From text-books; State Speller, lessons 351 to 408 inclusive.

Word Analysis.—Swinton, pages 75 to 104 inclusive.

Grammar and Composition.—State Grammar (revised) completed from page 195 inclusive.

Written Arithmetic.—State Advanced, pages 146 to 154 inclusive, omitting "Time"; pages 172 to 180; from "Partial Payments," page 214, complete the book, omitting cube root and all problems involving cube root; review thoroughly all tables of denominate numbers, including metric.

Mental Arithmetic.—Bailey complete from page 123, omitting pages 141 to 155 inclusive; take pages 13, 156, 157, 158.

Business Forms.—Ward's No. 4, in hands of teacher.

Geography.—State Advanced, pages 92 to 142.

History.—U. S. (State) completed from page 190 inclusive.

Civil Government.—(State) pages 92 to 127 inclusive.

Health Lessons.—(State) pages 83 to 148 inclusive; pages 237 to 245 inclusive.

Physics.—Mechanics, electricity, light, sound.

Writing.—California Vertical No. 6 repeated; accurate in principle, rapid.

Drawing.—Thompson's Model and Object Book No. 1.

Music.—Natural Music Reader No. 4, and Chart G.

ADVANCED EIGHTH (1897–98).

[*Note.*—For the year 1898–99 the work of this grade will be considerably advanced].

Reading and Literature.—Dole's "The American Citizen," Julius Cæsar, leaflet form.

Grammar, Spelling, Word Analysis.—Parallel the work prescribed for eighth grade; especial attention to analysis of sentences, parsing and descriptive compositions; essays, declamation, debating; some manual of parliamentary usage in hands of teacher.

Arithmetic.—State Advanced; completed, omitting cube root and all problems involving cube root. Special attention to commercial operations and mastery of metric system.

Mental Arithmetic.—Bailey: Interest, Bank Discount, Board Measurement, Proportion, Involution, Evolution, Mensuration, Geometric Figures; pages 124–160, inclusive, omitting pages 152–155, both inclusive.

Geography.—State Advanced Geography completed from last year's work in the eighth grade.

History.—U. S. History (State), completed from last year's work in the eighth grade.

Bookkeeping.—Bryant and Stratton Elementary (Common School), single and double entry. Commercial Forms. Accurate and Rapid Penmanship.

Health Lessons.—Completed from last year's work in the eighth grade.

Physics.—Eighth grade course and problems.

Drawing.—Educational Industrial Drawing, Mechanical Series No. 1 (Thompson).

Music.—Natural Music Book No. 4.

TIME TABLE.

	1st year.	2d year.	3d year.	4th year.	5th year.	6th year.	7th year.	8th year.	Advanced 8th year.
Reading and literature	350	340	300	260	150	125	100	100	100
Spelling	100	125	125	125	100	45	45	30	30
Word analysis	.....	.....	.....	....	....	30	30	45	45
Language and grammar	100	100	60	75	115	125	125	125	125
Composition	.....	.....	45	60	75	75	75	75	75
Arithmetic, written	200	200	225	150	150	200	200	200	200
Arithmetic, mental				100	100	50	50	50	50
Geography	.....	.....	45	100	100	125	125	125	125
History	.....	.....	.....	....	90	100	100	100	100
Civil government	.....	.....	.....	....	....	....	50	50	
Hygiene and physiology	15	15	30	45	45	60	60	60	60
Science (nature study, physics, etc.)	30	30	30	45	45	60	60	60	60
Writing	75	75	80	80	70	45	30	30	
Drawing	45	45	45	60	60	60	60	60	60
Music	90	75	60	60	60	60	60	60	60
Morals, manners, patriotism, humane education	45	45	30	40	40	40	30	30	30
Opening and closing exercises and dismissal	100	100	100	100	100	100	100	100	100
Calisthenics	50	50	50	50	50	50	50	50	50
Explanation of home work	.....	.....	25	50	50	50	50	50	50
Recess	100	100	100	100	100	100	100	100	100
Bookkeeping	.....	.....	.....	....	....	....	....	....	80
Total per week	1300	1300	1350	1500	1500	1500	1500	1500	1500

The above table is recommended so that the work in the different schools may be uniform as far as the time allotted to subjects may make it so. The numbers opposite each subject show the number of minutes per week to be devoted to that study. The time allotted to each subject includes the study periods.

A. M.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	A. M.
9:00 to 9:10	Opening exercises.	Opening exercises.	Opening exercises.	Opening exercises.	Opening exercises.	9:00 to 9:10
9:10 to 9:50	Written Arithmetic.	Written Arithmetic.	Written Arithmetic.	Written Arithmetic.	Written Arithmetic.	9:10 to 9:50
9:50 to 10:00	Mental Arithmetic.	Mental Arithmetic.	Mental Arithmetic.	Mental Arithmetic.	Mental Arithmetic.	9:50 to 10:00
10:00 to 10:05	Calisthenics.	Calisthenics.	Calisthenics.	Calisthenics.	Calisthenics.	10:00 to 10:05
10:05 to 10:30	Grammar.	Grammar.	Grammar.	Grammar.	Grammar.	10:05 to 10:30
10:30 to 10:50	*Recess.*	*Recess.*	*Recess.*	*Recess.*	*Recess.*	10:30 to 10:50
10:50 to 11:15	Reading and Literature.	Reading and Literature.	Reading and Literature.	Reading and Literature.	Reading and Literature.	10:50 to 11:15
11:15 to 11:40	Geography.	Geography.	Geography.	Geography.	Geography.	11:15 to 11:40
11:40 to 12:00	Spelling and Dismissal.	Word Analysis and Dismissal.	Spelling and Dismissal.	Word Analysis and Dismissal.	Spelling and Dismissal.	11:40 to 12:00
P. M. 1:00 to 1:30	Music.	Drawing.	Physiology.	Drawing.	Music.	P. M. 1:00 to 1:30
1:30 to 1:55	Composition.	History and Civil Government.	Composition.	History and Civil Government.	Composition.	1:30 to 1:55
1:55 to 2:00	Calisthenics.	Calisthenics.	Calisthenics.	Calisthenics.	Calisthenics.	1:55 to 2:00
2:00 to 2:30	History and Civil Government.	Science.	History, 2 to 2:20. Patriotism, 2:20 to 2:30.	Science.	Physiology.	2:00 to 2:30
2:30 to 2:45	Writing.	Morals, humane education, etc.	Writing.	Morals, humane education, etc.	Writing.	2:30 to 2:45
2:45 to 3:00	Explanation of home work and dismissal.	Explanation of home work and dismissal.	Explanation of home work and dismissal.	Explanation of home work and dismissal.	Explanation of home work and dismissal.	2:45 to 3:00

The time given in the "Suggested Program for Sixth Grade" corresponds to the allotment of time in the preceding "Time Table."

SUGGESTED PROGRAM FOR FIRST GRADE.

A. M.	
9:00 to 9:10	Opening exercises.
9:10 to 9:25	Conversational exercises.*
9:25 to 9:45	Reading (Chart Lesson).
9:45 to 10:00	Figure work.
10:00 to 10:05	Calisthenics.
10:05 to 10:30	Number lesson.
10:30 to 10:50	*Recess.*
10:50 to 11:00	Music.
11:00 to 11:20	Reading.
11:20 to 11:40	Spelling.
11:40 to 11:55	Object lessons.
11:55 to 12:00	Dismissal.
P. M.	
1:00 to 1:10	Music (Wed., Humane Education).
1:10 to 1:30	Reading.
1:30 to 1:45	Writing.
1:45 to 1:55	Phonetics.
1:55 to 2:00	Calisthenics.
2:00 to 2:10	Drawing.
2:10 to 2:15	Memorizing.
2:15 to 2:20	Dismissal.

* Monday, Morals and Manners; Tuesday, Plants and Animals; Wednesday, Hygiene; Thursday, Geography and History; Friday, Patriotism.

Note.—The above is suggested as an average program. It should be varied for the different quarters. The time given corresponds to the allotment in the preceding "Time Table."

INSTRUCTIONS TO TEACHERS.

READING.

The Time Table accompanying the Course of Study gives more hours per week to Reading than to any other subject. The difference is very marked in the primary grades but gradually becomes less until the grammar grades are reached, when the balance passes to the other side, and much less time is given to reading in the higher grades.

This division of time is based on the idea that reading is of more importance to the child than any other study, and is more easily learned than subjects which make larger demands on the reasoning powers.

The object of reading lessons is two-fold. The pupil is to learn to gather the thought from the printed page by scanning the lines, and is also to learn to express the thought orally in an intelligent and forcible manner.

Pupils should learn to keep the eye ahead of the lips in oral reading by a full half or even a whole line. The proper expression of thought is an impossibility unless this can be done.

One of the most notable defects in the oral reading in our schools is the lack of clear and distinct articulation. Many pupils leave the grammar grades without having acquired the habit of enunciating syllables clearly and distinctly. Vowels and diphthongs are slurred and consonants are vocalized so feebly as to be almost inarticulate.

Insist upon pupils defining the words in reading lessons.

For supplementary reading consult recommendations contained in State Readers. Riverside Library books are superior publications. Werner's Primer for first and second grades is an excellent supplementary book.

SPELLING.

In grades where no text-book in spelling is used, material for the spelling lessons is obtained from the reading, number, science and other lessons. From these sources teachers are to select an appropriate list of words for drill in spelling. In preparing such a list it should be the aim to classify the words on some basis, in order to assist the pupil in learning them.

Care should be taken that the pupils know the meaning of the words they spell. They should be encouraged to use all words in original sentences, and in the higher grades to define them. The lessons should not consist of so many new words that this drill in word-meaning and sentence-building cannot be done thoroughly and successfully. At all times attention should be given to neatness in written work, to distinctness of articulation and correctness of pronunciation in the oral exercises; teachers should remember that habits of speech and penmanship are being formed, and should see to it that these are good.

Phonic drill should be given in connection with spelling lessons.

Give pupils practice in indicating syllables.

Pupils of the third grade will often be found to articulate indistinctly. Special drills will be of great service in overcoming this difficulty.

The following list of words, taken from the Course of Study used in Milwaukee, will be found useful for this purpose. Selections should be made from the list to suit the needs of individuals:

Bad, bat—bag, back, pack—bed, bet—beg, peg, peck—bend, bent, pent—bid, bit—big, pig, pick—bug, pug, buck, puck—brig, brick, prig—crag, crack—clog, clock—date, dead, debt, death—deed, did, dig, Dick, trick, thick—dog, dock, dug, duck, tug, tuck—dove, doff, tough, do, due, to—droll, troll—eyes, ice, —eggs, x—five, fife—gave, cave—game, came—gig, kick—girl, curl—glean, clean—glue, clue—gold, cold, colt—grow, crow—grows, gross—gill, chill—had, hat—head, hate—held, health—hid, hit—his, hiss—hers, hearse—Jane, chain—jar, char—jam, sham—joke, choke—later, leather, lather, ladder, latter—led, let—lamb, lamp—mad, mat—nod, not, nut—pat, pad, path—pitcher, picture—poor, pure—said, set—thank, tank—than, Dan, then, den—thick, tick—thought, taught—thrall, drawl—thrash, trash—three, tree—through, true, threw—thread, tread—thrill drill, trill—throb, drop—van, fan—vat, fat—vain, fain—vest, west—verse, worse—thief, thieves—knife, knives—way, whey—whether, weather—whither, wither—where, ware—whale, wail, veil, fail—which, witch—with, width, whit, wit—y, why, vie, fy—whine, wine, vine, fine—while, wile, vile, file.

LANGUAGE.

The ability to express himself clearly, forcibly and correctly, both orally and in writing, is of the greatest use to every adult, no matter what his vocation.

The aim in this course is to enable pupils to express their thoughts fluently and in appropriate language, and, further, to teach them enough of the science of language to form a sound basis for future work in the advanced study of the mother tongue, and in acquiring other languages.

To secure this end the child must be trained wisely and systematically from the day he enters the primary school.

To do this well pupils must be furnished with abundant thought material, and this is accomplished best by combining the language work with observation, number and reading lessons in the primary grades, and later with geography, history and science.

It is to be noted that every recitation is a lesson in language. Errors which the teacher would criticise during the language period must be just as carefully corrected when they occur, for example, in the arithmetic lesson.

Written Language Work may be divided into Technical Work and Composition.

The aim of Technical Work is to secure grammatical accuracy.

The aim of Composition Work is to secure freedom, fluency, ease, clearness, force and propriety in expression.

The work in language and composition is probably the most laborious in the experience of the teacher. Composition of letters and brief essays should receive faithful and painstaking attention from the teacher, because its value to the pupil is probably beyond any other subject, for it invokes thought, disciplines reason, and places one in possession of the power of commanding thought and conveying it in elegant, cogent diction.

ARITHMETIC.

The objects of arithmetical work are to form correct concepts of numbers and their relations, and to acquire and establish habits of clear, ready, logical thinking, and of concise and accurate expression; further, as an every-day practical result, accuracy and rapidity in commercial computations, to wit: addition, multiplication (bill extensions), percentage (trade discounts) and interest.

Concepts of numbers are most conveniently developed by means of things. When the relations between numbers of things are known, a child passes easily and naturally to a knowledge of number without things, that is, abstract number. Objective teaching, then, is the rule in primary grades, and is the rational procedure in presenting such topics as proportion and square root.

For this reason the Grube method will be given to indicate to the teacher a superior method of teaching number work objectively to beginners.

Allow no guessing nor counting on fingers.

Slate or board work should be neat, figures well formed, and arranged in vertical columns as nearly as possible, and not scattered.

Be very certain that all steps are thoroughly mastered before new work is given: hence constantly drill and review.

In grammar grades logical analysis should be constantly used in explanations.

As soon as a mode of operation is mastered, pupils should be encouraged to use as few figures as possible ; the aim should continually be toward mental solutions.

Mental exercises with small numbers should generally precede, and always accompany, written exercises.

Have pupils frame and enunciate problems for one another.

All operations and processes taught should, if possible, be associated and compared with others previously taught, which are based upon the same principles. This is eminently true of percentage. If pupils be thoroughly drilled upon the five problems of percentage—profit and loss, commission, insurance, and taxes, are learned.

A thorough knowledge of arithmetic cannot be gained until pupil has had sufficient drill in its manifold departments to fix principles firmly in mind : hence the necessity for practice, not only on the problems given in the text-book, but others that may be selected by the teacher.

Accuracy first, then *rapidity*. Correctness of result and rapidity of execution can be attained only by *continued practice*.

There is too little *clear*, *logical reasoning* in many of our classes.

Avoid such expressions as "times five by six," instead of " multiply five by six."

FIRST GRADE.

The attention of teachers of this grade is called to Hubbell's Combination Cards.

The following presentation of the Grube method for *first* and *second* grades is from the Hon. John Swett's "Methods of Teaching," and teachers are instructed to take their classes through the work here prescribed as strictly as through that dictated in the regular order elsewhere :

GRUBE'S PRINCIPLES.

1. " Each lesson in arithmetic must be also a lesson in language. The teacher must insist on readiness and correctness

of expression. As long as the language for the number is imperfect, the idea of the number will be defective."

2. "The teacher must require the scholar to speak as much as possible."

3. "Answers should be given, sometimes by the class in concert, and sometimes by the scholar individually."

4. "Every process must be illustrated by means of objects."

5. "Measure each new number with the preceding ones."

6. "Teachers must insist on neatness in making figures."

ORDER OF STEPS.

First Step.—Illustrate the required combinations by means of *counters* in the hands of the children themselves, and by other objects in the hands of the teacher. Each child must be supplied with ten small square wooden blocks, like the blocks of a checkerboard. If the blocks cannot be had, use shells, corn, pebbles, pins, sticks, buttons, etc. Make use of a numeral frame, if there is one in school.

Second Step.—Express the same combinations on the blackboard or on slates, both with *marks* and with figures.

Third Step.—Take the same combinations mentally with abstract numbers.

Fourth Step.—Practical problems in applied numbers.

HOW TO BEGIN.—I. THE NUMBER ONE.

1. Hold up one counter, one hand, one finger, one slate, etc.

On your slates make one straight mark, one dot, one cross, etc.

On the blackboards make one mark, one dot, one cross, etc.

2. Place one counter on the middle of your desk; take it away; how many have you left?

Make one mark on your slate; rub it out; how many marks are left?

3. Send the class to the blackboards and let them make the mark for one—thus, |—and also the figure—thus, 1.

II. The Number Two.

1. Each of you take one counter and place it by itself on your desk; now take another and place close to it; how many counters have you? (Require the answer in a full sentence.)

Make one straight mark on your slate; make another close to it; how many have you now?

Go to the blackboards; make one mark; another close to it; how many now?

Clap your hands once; again; how many claps?

Rap on your desks once; again; how many raps?

2. *Counting.*—Place one counter on your desk; a little way off from the first one, place two counters close together, thus, * ⁑

Count, *one*, *two*; *two*, *one*.

On your slates make marks—thus, **I**, **II**, and count forwards and backwards.

3. *Addition.*—(*a.*) Place one counter on the desk; place another counter close to it; how many have you now? *Ans.* I have two counters. How many counters are one counter and one counter? *Ans.* One counter and one counter are two counters.

[The teacher will further illustrate with books, pencils, crayons, etc.]

(*b.*) *Slate and Blackboard.*—Make one mark; another one near it. How many marks have you made?

[Continue with rings, dots, crosses, etc.]

4. *Subtraction.*—(*a.*) Place two counters together on your desk; take one away; how many have you left? *Ans.* I have one left. One counter from two counters leaves how many? *Ans.* One counter from two counters leaves one counter.

[Teacher will continue with fingers, hands, books, and other objects.]

(*b.*) *Slate and Blackboard.*—Make two marks; rub out one; how many are left? Make two marks; rub them out; how many are left? *Ans.* None are left. Two taken away from two leaves how many?

5. *Multiplication.*—(*a.*) Each of you put one counter on the desk; now put another one with it; how many times have you taken one counter? *Ans.* I have taken one counter twice.

Two times one counter are how many counters? *Ans.* Twice one counter are two counters.

(*b.*) *Slate and Blackboard.*—Make one mark; now another. How many times have you made one mark? *Ans.* I have made one mark twice. Then two times one mark are how many marks? *Ans.* Two times one mark are two marks.

6. *Division.*—Place two counters on the desk. Call up two boys and give one counter to each. Question thus: How many counters has John? How many has Frank? If two boys divide two counters between them, how many has each boy? Show the similarity of the expressions $2 \div 2 = 1$, and $\frac{1}{2}$ of $2 = 1$.

7. *Comparison.*—Give one counter to John and two to Frank. How many counters has John? Frank? How many has Frank more than John? How many more is two than one? How many counters has John less than Frank? Then one is one less than two.

Blackboard.—Illustrate the same with marks.

8. *Applied Numbers.*—(*a.*) *Addition.*

1. John ate one apple at recess, and another apple at noon; how many apples did he eat?
2. Frank had one dime, and his father gave him one more; how many dimes did he have?
3. The teacher will make up ten similar questions.

(*b.*) *Multiplication.*—1. John went a-fishing, and twice he caught one fish; how many fishes did he catch?

The teacher will make up ten similar questions.

(*c.*) *Division.*—1. If two boys divide two marbles between them, how many will each have?

Dictate ten similar questions.

9. *Figures and Signs.*—Teach the use of the five signs $+$, $-$, $\times$, $\div$, $=$. Tell them that $+$ means "and" or "added to," and that it is read "*plus;*" that $-$ means "taking away" or "less," and that it is read "*minus;*" that $\times$ means "times," and is read "*multiplied by;*" that $\div$ means "contains," and that it is read "*divided by;*" that $=$ means *equal to*, *equals.*

$+$ is called the sign of addition.
$-$ " " subtraction.
$\times$ " " multiplication.
$\div$ " " division.
$=$ " " equality.

ILLUSTRATIONS OF THE USE OF SIGNS.

Let the children make each combination first with the counters.

a. By Marks.

$| + | = ||$
$|| - | = |$
$| \times || = ||$
$|| \div || = |$

b. By Figures.

$1 + 1 = 2$
$2 - 1 = 1$
$1 \times 2 = 2$
$2 \div 1 = 2$
$2 \div 2 = 1$
$\frac{1}{2}$ of $2 = 1$

10. *Table to be Taught.*

2 pints make 1 quart.
1 quart equals 2 pints.

III. THE NUMBER THREE.

1. *Measuring.*

First illustrate by using counters.

By One.

$1 + 1 + 1 = 3$
$3 - 1 - 1 - 1 = 0$
$3 - 1 - 1 = 1$
$3 - 2 = 1$
$1 \times 3 = 3$
$3 \times 1 = 3$
$3 \div 1 = 3$

By Two.

$2 + 1 = 3$
$1 + 2 = 3$
$1 \times 2 + 1 = 3$
$3 - 2 = 1$
$3 \div 2 = 1$ and 1 remainder, or
$\frac{1}{2}$ of $3 = 1$ and $\frac{1}{2}$

2. *Second Form of Expressing.*

Add.	*Subt.*	*Subt.*	*Mult.*	*Div.*	*Div.*
1	3	3	1	1)3	2)3
1	−1	−2	×3	3	$1\frac{1}{2}$
1	−1	1	3		
3	1				

Note.—Read $3 \div 1$, at first, thus: "1 is contained in 3 three times;" 1×3 thus: "3 times 1 equals three." The idea of "to be contained" must precede the higher and more difficult conception of "dividing."

3. *Practice.*

1. How many are $3 - 1 - 1 + 2$ divided by 1?
2. $1 + 1 + 1 - 2 + 1 + 1 - 2 + 1 + 1 =$ how many?

4. *Applied Numbers.*

The teacher will make up ten questions.

IV. THE NUMBER FOUR.

1. *Measuring.*

First illustrate by using counters.

By One.	*By Two.*
$1 + 1 + 1 + 1 = 4$	$2 + 2 = 4$
$4 - 1 - 1 - 1 - 1 = 0$	$4 - 2 = 2$
$4 - 1 - 1 - 1 = 1$	$2 \times 2 = 4$
$1 \times 4 = 4$	$4 \div 2 = 2$, or
$4 \times 1 = 4$	$\frac{1}{2}$ of $4 = 2$
$4 \div 1 = 4$	

By Three.

$3 + 1 = 4$	$4 - 3 = 1$
$1 + 3 = 4$	$4 - 1 = 3$
$1 \times 3 + 1 = 4$	$4 \div 3 = 1$ and 1 r., or
$3 \times 1 + 1 = 4$	$\frac{1}{3}$ of $4 = 1\frac{1}{3}$

2. *Second Form of Writing.*

Add.	*Add.*	*Subt.*	*Subt.*	*Mult.*	*Mult.*	*Div.*
2	3	4	4	2	1	$2\overline{)4}$
$+ 2$	$+ 1$	$- 2$	$- 3$	$\times 2$	$\times 4$	2
4	4	2	1	4	4	

3. *Practice.*

1. $2 \times 2 - 3 + 2 \times 1 + 1 - 2 \times 2 =$ how many?

The teacher will give ten similar questions.

4. *Combinations.*

1. What number must we double to get 4?
2. 2 is one half of what number?
3. 1 is the fourth part of what number?

Give similar questions.

5. *Practical Illustrations.*

1. Name 4 animals that have only 2 legs.
2. Name 4 animals that have 4 legs each.
3. Name a *thing* that has 4 legs.
4. Name a *thing* that has 3 legs.

6. *Table to be Learned.*

4 gills make 1 pint.
2 pints make 1 quart.
4 quarts make 1 gallon.

Pass around the class a pint measure and a quart measure, and then make up numberless practical examples.

V. THE NUMBER FIVE.

First, combinations with counters.

1. *Measuring.*

By One.

$1 + 1 + 1 + 1 + 1 = 5$
$5 - 1 - 1 - 1 - 1 - 1 = 0$
$5 - 1 - 1 - 1 - 1 = 1$
$1 \times 5 = 5$
$5 \times 1 = 5$
$5 \div 1 = 5$

By Two.

$2 + 2 + 1 = 5$
$5 - 2 - 2 = 1$
$2 \times 2 + 1 = 5$
$5 \div 2 = 2$ and 1 r.
$\frac{1}{2}$ of $5 = 2\frac{1}{2}$

By Three.

$3 + 2 = 5$
$2 + 3 = 5$
$5 - 2 = 3$
$5 - 3 = 2$
$1 \times 3 + 2 = 5$
$5 \div 3 = 1$, 2 r.
$\frac{1}{3}$ of $5 = 1\frac{2}{3}$

By Four.

$4 + 1 = 5$
$1 + 4 = 5$
$5 - 4 = 1$
$5 - 1 = 4$
$1 \times 4 + 1 = 5$
$5 \div 4 = 1$, 1 r.
$\frac{1}{4}$ of $5 = 1\frac{1}{4}$

2. *Practice.*

1. $5 - 2 - 3 + 2 \times 2 =$ how many?
2. $2 \times 2 + 1 - 3 \times 1 + 2 \div 4 =$?

3. *Applied Numbers.*

The teacher will make up at least ten simple questions.

VI. THE NUMBER SIX.

1. *Illustration.*

(*a.*) Place six counters in a row, count forwards and backwards.

(*b.*) Make six marks on slates—thus, | | | | | |. Count forwards and backwards.

(*c.*) Make figures—thus, 1, 2, 3, 4, 5, 6. Count forwards and backwards.

2. *Addition.*

Illustrate the following combinations first with counters, next with marks:

1 + 1	1 + 2	1 + 3	1 + 4	1 + 5
2 + 1	2 + 2	2 + 3	2 + 4	
3 + 1	3 + 2	3 + 3		
4 + 1	4 + 2			
5 + 1				

3. *Subtraction.*

Illustrate as in addition.

1 — 1	2 — 2	3 — 3	4 — 4	6 — 6
2 — 1	3 — 2	4 — 3	5 — 4	
3 — 1	4 — 2	5 — 3	6 — 4	
4 — 1	5 — 2	6 — 3		
5 — 1	6 — 2			
6 — 1				

4. *Analysis.*

$6 = 1 + 1 + 1 + 1 + 1 + 1$
$6 = 2 + 1 + 1 + 1 + 1$
$6 = 2 + 2 + 1 + 1$
$6 = 2 + 2 + 2$
$6 = 3 + 1 + 1 + 1$

$6 = 3 + 2 + 1$
$6 = 3 + 3$
$6 = 4 + 1 + 1$
$6 = 4 + 2$
$6 = 5 + 1$

Write the preceding in the second form.

5. *Multiplication.*

$1 \times 1 = ?$
$1 \times 2 = ?$
$1 \times 3 = ?$
$1 \times 4 = ?$
$1 \times 5 = ?$
$1 \times 6 = ?$

$2 \times 1 = ?$
$2 \times 2 = ?$
$2 \times 3 = ?$

$3 \times 1 = ?$
$3 \times 2 = ?$

$1 \times 4 = ?$
$1 \times 5 = ?$
$1 \times 6 = ?$

Write the preceding in the second form.

6. *Division.*

$2 \div 2$
$3 \div 2$
$4 \div 2$
$5 \div 2$
$6 \div 2$

$3 \div 3$
$4 \div 3$
$5 \div 3$
$6 \div 3$

$4 \div 4$
$5 \div 4$
$6 \div 4$

$5 \div 5$
$6 \div 5$

$6 \div 6$

7. *Exercise with Counters.*

1. Place two counters together; two more; two more; how many counters?
2. How many times two counters?
3. How many times are two counters contained in six counters?
4. Place three counters together; three more; how many?
5. How many times three counters?
6. Etc.

8. *Division.—Another Form.*

$\frac{1}{2}$ of $2 = 1$
$\frac{1}{2}$ of $3 = 1\frac{1}{2}$
$\frac{1}{2}$ of $4 = 2$
$\frac{1}{2}$ of $5 = 2\frac{1}{2}$
$\frac{1}{2}$ of $6 = 3$

$\frac{1}{3}$ of $3 = 1$
$\frac{1}{3}$ of $4 = 1$, 1 r.
$\frac{1}{3}$ of $5 = 1$, 2 r.
$\frac{1}{3}$ of $6 = 2$

$\frac{1}{4}$ of $4 = 1$
$\frac{1}{4}$ of $5 = 1\frac{1}{4}$
$\frac{1}{4}$ of $6 = 1\frac{2}{4}$

9. *Division.—Regular Form.*

Write thus: $\begin{array}{r}2)\underline{2}\\1\end{array}$ $\quad\begin{array}{r}2)\underline{3}\\1\frac{1}{2}\end{array}$ $\quad\begin{array}{r}2)\underline{4}\\2\end{array}$ etc.

10. *Comparison.*

6 is 1 more than 5	1 is 5 less than 6
6 is 2 more than 4	2 is 4 less than 6
6 is 3 more than 3	3 is 3 less than 6
6 is 4 more than 2	4 is 2 less than 6
6 is 5 more than 1	5 is 1 less than 6

All these examples are to be given promiscuously as well as in regular order.

[Proceed in a similar manner with the numbers seven, eight and nine.]

VII. THE NUMBER TEN.

1. *Illustration.*

(*a.*) Place ten counters on the desk.
(*b.*) Make ten marks on the slate or board.
(*c.*) Make the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
(*d.*) Count forwards and backwards.

2. *Measurement.*

Measuring by counters.

1. How many *twos* in ten?
2. How many *threes* in ten?
3. How many *fours*, *fives*, *sixes*, etc.?

3. *Combinations.*

Let pupils make all the combinations they can that shall equal ten—thus:

$$2 + 2 + 2 + 2 + 2 = 10$$
$$3 + 3 + 3 + 1 = 10$$
$$5 + 5 = 10$$
$$4 + 4 + 2 = 10, \text{ etc.}$$

4. *Second Form of Expressing.*

Put the same into the regular form of addition—thus :

$$\begin{array}{r}3\\3\\3\\1\\\hline 10\end{array}$$

Correct Way.—One, four, seven, ten.

Incorrect Way.—One and three are four, and three are seven, and three are ten.

5. *Multiplication.*

$1\times 1=1$	$2\times 1=\ \ 2$	$3\times 1=3$	$4\times 1=4$
$1\times 2=2$	$2\times 2=\ \ 4$	$3\times 2=6$	$4\times 2=8$
$1\times 3=3$	$2\times 3=\ \ 6$	$3\times 3=9$	
$1\times 4=4$	$2\times 4=\ \ 8$		
$1\times 5=5$	$2\times 5=10$		
etc. to 10			

6. *Division.*

$2\div 2=?$	$3\div 3=?$	$4\div 4=?$	$5\div 5=?$
$3\div 2=?$	$4\div 3=?$	$5\div 4=?$	$6\div 5=?$
$4\div 2=?$	$5\div 3=?$	$6\div 4=?$	$7\div 5=?$
etc. to 10	etc. to 10	etc. to 10	etc. to 10

7. *Another form of Division.*

$\frac{1}{2}$ of $2=?$	$\frac{1}{3}$ of $3=?$	$\frac{1}{4}$ of $4=?$
$\frac{1}{2}$ of $3=?$	$\frac{1}{3}$ of $4=?$	$\frac{1}{4}$ of $5=?$
$\frac{1}{2}$ of $4=?$	$\frac{1}{3}$ of $5=?$	$\frac{1}{4}$ of $6=?$
etc. to 10	etc. to 10	etc. to 10.

8. *Another form of Division.*

$\begin{array}{r}2)2\\\hline 1\end{array}$	$\begin{array}{r}2)3\\\hline 1\frac{1}{2}\end{array}$	$\begin{array}{r}2)4\\\hline 2\end{array}$	$\begin{array}{r}2)5\\\hline 2\frac{1}{2}\end{array}$	etc. to 10

In the same way divide by three, four and five.

9. *Comparison.*

10 is 1 more than 9	1 is 9 less than 10
10 is 2 more than 8	2 is 8 less than 10
10 is 3 more than 7	3 is 7 less than 10
10 is 4 more than 6	4 is 6 less than 10
10 is 5 more than 5	5 is 5 less than 10
etc. to 10	etc. to 10

All these comparisons are to be given promiscuously as well as in regular order.

10. *Concrete Examples.*

Teachers will make up from ten to twenty concrete examples.

SECOND GRADE.

I. NUMBERS FROM TEN TO TWENTY.

1. Illustration with the number nineteen.
    1. Place the counters on the desk.
    2. Make marks on the slate or board.
    3. Make the figures from one to nineteen.
    4. Count forwards and backwards.

2. Measuring by counters.
    1. How many *twos* in nineteen?
    2. How many *threes*, etc., to *nines*?

3. *Addition Table.*

$1 + 2 + 2$, etc., to 19
$2 + 2 + 2$, etc., $+ 1$ to 19
$3 + 3 + 3$, etc., to 19
$4 + 4 + 4 + 4 + 3 = 19$
$5 + 5 + 5 + 4 = 19$
$6 + 6 + 6 + 1 = 19$
$7 + 7 + 5 = 19$
$8 + 8 + 3 = 19$
$9 + 9 + 1 = 19$

Put the preceding also into vertical columns.

4. Let scholars make as many combinations as possible equal to nineteen.

5. *Substraction.*—Reverse the tables for addition.

6. *Multiplication.*

1 × 2	1 × 2	1 × 3	1 × 4	1 × 5
1 × 3 to 19	2 × 2 to 9	2 × 3 to 6	2 × 4 to 4	2 × 5 to 3

7. *Division.*

19 ÷ 1, 19 ÷ 2, 19 ÷ 3, up to 19.

8. *Miscellaneous Exercises.*

$8 + 4 = 12$
$7 + 5 + 6 = 18$
$19 - 4 = 15$
$19 - 9 = 10$
$3 \times 6 = 18$
$16 \div 4 = 4$
$5 + 9 - 7 = 7$

$3 + 3 + 3 - 8 = 1$
$12 \div 6 = 2$
$17 \div 4 = 4$, 1 r.
$16 - 12 = 4$
$2 \times 2 \times 2 = 8$
$17 - 9 + 9 = 17$
$9 + 9 - 11 = 7$

$2 \times 3 \times 3 = 18$
$4 \times 3 \times 1 = 12$
$16 \div 8 = 2$
$18 \div 9 = 2$
$18 \div 5 = 3$, 3 r.
$19 \div 4 = 4$, 3 r.

Table to be Learned.

12 inches = 1 foot.
3 feet = 1 yard.

16 ounces = 1 pound.

Note.—The inch, foot and yard to be drawn repeatedly on the board by pupils. An ounce weight and a pound weight must be passed around in the class.

II. FRACTIONS.

Directions.—Illustrate halves, thirds, etc., by breaking up crayons, cutting up apples, or by breaking slips of wood. Having shown your pupils how *one-half* is made and how one-half is written, send them to the blackboards, saying nothing whatever about *numerator* or *denominator*, and drill them on numberless examples like the following:

1. *One-half.*

1. $\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$.
2. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{6}{2} = 3$; etc.

2. *Mixed Numbers.*

$$\begin{array}{rcrcrcrl}
2\tfrac{1}{2} & \qquad & 6 = 5\tfrac{2}{2} & \qquad & 1\tfrac{1}{2} & \qquad & 4 & \\
3\tfrac{1}{2} & & -\,3\tfrac{1}{2} = 3\tfrac{1}{2} & & 2\tfrac{1}{2} & & -\,1\tfrac{1}{2} & \quad \text{etc.} \\
\hline
6 & & 2\tfrac{1}{2} = 2\tfrac{1}{2} & & 4 & & 2\tfrac{1}{2} &
\end{array}$$

Note.—Give a great many drill examples like the preceding, and keep your little scholars busy on such simple questions until they become expert in their work. Do not be in a hurry to proceed immediately, after the manner of text-books, to crowd a dozen new things upon them.

3. *Combinations.*

$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$
$\frac{2}{2} - \frac{1}{2} = \frac{1}{2}$, or
$1 - \frac{1}{2} = \frac{1}{2}$
$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
$\frac{1}{2} \div \frac{1}{2} = 1$

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$
$\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$
$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$
$\frac{1}{3} \div \frac{1}{3} = 1$

$\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$
$\frac{2}{4} - \frac{1}{4} = \frac{1}{4}$, or
$\frac{1}{2} - \frac{1}{4} = \frac{1}{4}$
$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$
$\frac{1}{4} \div \frac{1}{4} = 1$

4. *Addition.*

$$\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3} = \frac{9}{3} = 3$$
$$\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4} = \frac{12}{4} = 3$$
$$\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5} = \frac{10}{5} = 2$$

Note.—Send the class to the boards and give twenty similar examples.

5. *Addition.*

$$\begin{array}{rcrcrcrcrl}
3\tfrac{1}{2} & \qquad & 3\tfrac{1}{3} & \qquad & 1\tfrac{1}{4} & \qquad & 6\tfrac{1}{5} & \qquad & 5\tfrac{1}{6} & \\
2\tfrac{1}{2} & & 2\tfrac{1}{3} & & 3\tfrac{1}{4} & & 2\tfrac{1}{5} & & 2\tfrac{1}{6} & \\
4\tfrac{1}{2} & & 4\tfrac{1}{3} & & 5\tfrac{1}{4} & & 4\tfrac{1}{5} & & 3\tfrac{1}{6} & \\
1\tfrac{1}{2} & & 1\tfrac{1}{3} & & 2\tfrac{1}{4} & & 5\tfrac{1}{5} & & 4\tfrac{1}{6} & \\
\hline
12 & & 11\tfrac{1}{3} & & 12 & & 17\tfrac{4}{5} & & 14\tfrac{4}{6} & = 14\tfrac{2}{3}
\end{array}$$

Note.—Give at least one hundred similar drill examples, in ten successive lessons.

6. *Multiplication.*

$\frac{1}{2} \times 1 = \frac{1}{2}$
$\frac{1}{2} \times 2 = \frac{2}{2} = 1$
$\frac{1}{2} \times 3 = \frac{3}{2} = 1\frac{1}{2}$
$\frac{1}{2} \times 4 = \frac{4}{2} = 2$
etc.

$\frac{1}{3} \times 1 = \frac{1}{3}$
$\frac{1}{3} \times 2 = \frac{2}{3}$
$\frac{1}{3} \times 3 = \frac{3}{3} = 1$
$\frac{1}{3} \times 4 = \frac{4}{3} = 1\frac{1}{3}$
etc.

$\frac{1}{4} \times 1 = \frac{1}{4}$
$\frac{1}{4} \times 2 = \frac{2}{4} = \frac{1}{2}$
$\frac{1}{4} \times 3 = \frac{3}{4}$
$\frac{1}{4} \times 4 = \frac{4}{4} = 1$
etc.

Second Form.—Mixed Numbers.

$2\frac{1}{2}$	$4\frac{1}{2}$	$2\frac{1}{3}$	$5\frac{1}{3}$	$3\frac{1}{4}$	$2\frac{1}{4}$
2	3	2	3	3	4
5	$13\frac{1}{2}$	$4\frac{2}{3}$	16	$9\frac{3}{4}$	9

7. *Division and Multiplication.*

Division.	*Multiplication.*
$1 \div 2 = \frac{1}{2}$	$\frac{1}{2} \times 2 = \frac{2}{2} = 1$
$1 \div 3 = \frac{1}{3}$	$\frac{1}{3} \times 3 = \frac{3}{3} = 1$
$1 \div 4 = \frac{1}{4}$	$\frac{1}{4} \times 4 = \frac{4}{4} = 1$
etc., to tenths.	etc., to tenths.

8. *Decimal Fractions.* [*Tenths.*]

Directions.—Send your pupils to the blackboards, and let them write and read examples like the following, without going into any philosophical explanation whatever. At this stage, the point is to *do* something.

Addition.	*Substraction.*
(1.) $.2 + .2 = .4$	(2.) $.4 - .2 = .2$
(3.) $.3 + .3 = .6$	(4.) $.6 - .3 = .3$
(5.) $.4 + .3 = .7$	(6.) $.7 - .4 = .3$

Give at least ten lessons, each containing from ten to twenty similar examples.

Second Form.

(1.)	(2.)	(3.)	(4.)	(5.)	(6.)
.2	.3	.4	.4	.6	.7
.2	.3	.3	− .2	− .3	− .4
$.4 = \frac{4}{10}$	$.6 = \frac{6}{10}$	$.7 = \frac{7}{10}$	$.2 = \frac{2}{10}$	$.3 = \frac{3}{10}$	$.3 = \frac{3}{10}$

9. *Addition.*

.2	.5	1.2	1.3	2.2
.3	.6	1.3	1.4	3.3
.2	.4	1.5	1.5	4.4
$.7=\frac{7}{10}$	$1.5=1\frac{5}{10}$	4.0	$4.2=4\frac{2}{10}$	$9.9=9\frac{9}{10}$

Send the class to the boards and give similar examples.

10. *Multiplication.*

$.2 \times 1 = .2 = \frac{2}{10}$
$.2 \times 2 = .4 = \frac{4}{10}$
$.2 \times 3 = .6 = \frac{6}{10}$
$.2 \times 4 = .8 = \frac{8}{10}$
$.2 \times 5 = 1.0$
$.2 \times 6 = 1.2 = 1\frac{2}{10}$
$.2 \times 7 = 1.4 = 1\frac{4}{10}$
$.2 \times 8 = 1.6 = 1\frac{6}{10}$
$.2 \times 9 = 1.8 = 1\frac{8}{10}$

In the same way take .3, .4, .5.

11. *Addition of Common and Decimal Fractions.*

(1.)	(2.)	(3.)
$\frac{1}{2} = .5 = \frac{5}{10}$	$2\frac{1}{2} = 2.5 = 2\frac{5}{10}$	$1\frac{1}{2} = 1.5 = 1\frac{5}{10}$
$\frac{1}{2} = .5 = \frac{5}{10}$	$3\frac{1}{2} = 3.5 = 3\frac{5}{10}$	$1\frac{1}{2} = 1.5 = 1\frac{5}{10}$
$\frac{1}{2} = .5 = \frac{5}{10}$	$4\frac{1}{2} = 4.5 = 4\frac{5}{10}$	$1\frac{1}{2} = 1.5 = 1\frac{5}{10}$
$1\frac{1}{2} = 1.5 = 1\frac{5}{10}$	$10\frac{1}{2} = 10.5 = 10\frac{5}{10}$	$4\frac{1}{2} = 4.5 = 4\frac{5}{10}$

12. *Table.*

10 cents 1 dime.
10 dimes 1 dollar.

Pass a dollar, a dime and a cent around the class, and give easy practical questions. Make the sign of dollars, and give simple questions in adding dollars.

13. *Decimals.*

Multiplication.	*Division.*
1. $.2 \times 4 = .8 = \frac{8}{10}$	2. $.8 \div 4 = .2 = \frac{2}{10}$
3. $.3 \times 3 = .9 = \frac{9}{10}$	4. $.9 \div 3 = .3 = \frac{3}{10}$
5. $.4 \times 4 = 1.6 = 1\frac{6}{10}$	6. $1.6 \div 4 = .4 = \frac{4}{10}$
7. $.7 \times 2 = 1.4$, etc.	8. $1.4 \div 2 = .7 = \frac{7}{10}$

14. *Multiplication.*

$$\begin{array}{ccccccc} .2 & .3 & .4 & .7 & .7 & .6 & .5 \\ \underline{4} & \underline{3} & \underline{4} & \underline{2} & \underline{3} & \underline{2} & \underline{2} \\ .8 = \frac{8}{10} & .9 = \frac{9}{10} & 1.6 = 1\frac{6}{10} & 1.4 = 1\frac{4}{10} & 2.1 = 2\frac{1}{10} & 1.2 = 1\frac{2}{10} & 1.0 \end{array}$$

The teacher will give five lessons of five examples each, similar to the above.

ADDITIONAL INSTRUCTIONS.

The author of this manual herewith presents a few instructions suggested by his experience as a teacher in the school department of San Francisco.

THIRD GRADE.

Insist upon adding by units, that is, pupils should think only of the sums of units, never repeating tens, *e. g.*:

98
41
77
84
79
63
28
27

Pupil should say, 15, 18, 27, 31, 8, 9 (not 38, 39), and should think of 9 + 8 as being 7 making 47, not 39 + 8 = 47.

Practice on adding or subtracting two numbers both of which are greater than 10 and less than 100.

Example.	*Example.*
Add 72 and 27	From 85 subtract 47
Solution.	*Solution.*
$72 + 20 = 92$ / $92 + 7 = 99$ or $72 + 7 = 79$ / $79 + 20 = 99$	$85 - 40 = 45$ / $45 - 7 = 38$ or $85 - 7 = 78$ / $78 - 40 = 38$
(saying 72, 92, 97.)	(saying 85, 45, 38.)

In reduction of halves to fourths, sixths, eighths and twelfths, use can be made of the foot rule.

Teach pupils to write and read United States money.

Make constant use of the tables of dry and liquid measure, time, weight (avoirdupois).

Practice problems like the following:

$$\begin{array}{llcl} 74 \div 2 = ? & 74 = 60 + 14 & & \frac{1}{2} \text{ of } 70 = 35 \\ & 60 \div 2 = 30 & \text{or} & \frac{1}{2} \text{ of } 4 = 2 \\ & 14 \div 2 = 7 & & 35 + 2 = 37 \\ & 30 + 7 = 37 & & \end{array}$$

$$\begin{array}{ll} 27 \times 7 = ? & 27 = 20 + 7 \quad \text{or 2 tens and 7 units} \\ & 20 \times 7 = 140 \\ & 7 \times 7 = 49 \\ & 140 + 49 = 189 \end{array}$$

$$\begin{array}{lcl} 134 \div 2 = ? & & \\ 120 \div 2 = 60 & & 100 \div 2 = 50 \\ 14 \div 2 = 7 & \text{or} & 34 \div 2 = 17 \\ 60 + 7 = 67 & & 50 + 17 = 67 \end{array}$$

Pay much attention to concrete work.

FOURTH GRADE.

If the work of the preceding three years has been properly done, the pupil should manipulate numbers through short division accurately and without conscious effort. If this end has not been reached the teacher must stop until it is reached.

Pupils *must throughly possess* the *general principles* of *division* as stated on pages 55 and 56 of the State advanced arithmetic.

In connection with United States money, teach the use of the decimal point. Teach that a cent=$1/100 or $.01; a dime is $1/10=$.1 or $.10, $.20=$1/5, $.25=¼, $.33⅓=$⅓, $.50=$½, $.75=$¾. Show that .1=1/10; that .10 is called 10-hundredths, or 10 per cent, or 10 out of every hundred. Show that .01 is read one one-hundredth, or 1 out of every hundred; .05=five-hundredths=5 out of every hundred. If the pupil has $1 or 100 cents and spends a nickel, he spends 5 out of the hundred, or five per cent; or, if he has 100 cents and spends 5 per cent, he spends 5 out of every hundred: he has one hundred, hence he spends 5 cents.

Apply this to the metre. Place in the hands of pupils a stick 39⅜ inches in length. Have them divide it into tenths. Have them name this as .1 metre, or 1/10 metre or 1 decimetre (dm). Have them divide the decimetre into 10 equal parts. Show them that each part is 1/100 or .01 of a metre, and inform them that it is named a centimetre (cm). Now have them frame table

10 cm=1 dm
10 dm=1 m or metre.

Practice reading

.15 m=15 cm, 86 cm=.86 m
.4m=4/10 m=4 dm, etc.

Long Division.—Commence with divisors of two figures and do not use divisions exceeding three figures.

FIFTH GRADE.

Practice extensively the resolution of numbers from 2 to 200 into their prime factors.

Greatest Common Divisor, or Highest Common Factor of two or more numbers, is the product of all *common* prime factors each used the least number of times that it is found in any number.

e. g.—What is the G. C. D. or H. C. F. of 12, 20, 28, 56?

Solution.

$12 = 2 \times 2 \times 3$
$20 = 2 \times 2 \times 5$
$28 = 2 \times 2 \times 7$
$56 = 2 \times 2 \times 2 \times 7$

The common factor is 2. The least number of times it is found in any number is twice; hence H. C. F. $= 2 \times 2 = 4$.

The Least Common Multiple is the smallest number that will contain two or more numbers without remainder, and is the product of *all different* prime factors each used the greatest number of times it is found in any number.

e. g.—What is the L. C. M. of 24, 36, 42?

24 = 2 × 2 × 2 × 3
36 = 2 × 2 × 3 × 3
42 = 2 × 3 × 7

The different prime factors are 2, 3 and 7; 2 is found the greatest number of times in 24, or 3 times; 3 is used twice in 36; 7 is used once in 42; hence L. C. M. = 2 × 2 × 2 × 3 × 3 × 7 = 504; H. C. F. = 2, that being the only common factor.

Addition.—Teachers should dictate about three times a week 12 numbers of 5 figures each. Insist that they write the numbers in columns that *are* strictly vertical. Practice so that by end of year no pupil is more than *two* minutes in securing an accurate result.

Answers expressed to such problems as this: What part of 18 is 7. When decimals are learned have pupils find the result in decimal fraction.

Metric System.—Review work of fourth grade.

Metre (m) = 39.37 inches. Litre (l) = unit of capacity = 1.0567 liquid qt., or 1 1/20, and .908 dry qt., or 9/10, and takes the place of gill, pt., qt., gallon, peck, etc. Gramme (g) = 15.432 grains or about 1/28 oz., and takes the place of oz., lb., etc.

Pupils learn:

centi (c) = 1/100 of anything	hence:	10 c = 1 d	hence:	10 cl = 1 dl
deci (d) = 1/10 " "		10 d = unit		10 dl = 1 l
Deka (D) = 10 " "		10 units = 1 D		10 l = 1 Dl
Hecto (H) = 100 " "		10 D = 1 H		10 Dl = 1 Hl

and so for metres and grammes.

Long Division.—Divisions of three and four figures.

At the end of this year pupils should be able to state the following abstract problems and give the method of solution:

1. Given, the sum of several numbers and all of them but one to find that one.

2. Given, the less of two numbers and their difference, to find the greater number.

3. Given, the greater of two numbers and their difference, to find the less number.

4. Given, the minuend and remainder, to find the subtrahend.

5. Given, the subtrahend and remainder, to find the minuend.

6. Given, the product and one of two factors, to find the other factor.

7. Given, the continued product of several factors and all the factors but one, to find that factor.

8. Given, the product and multiplicand, to find the multiplier.

9. Given, the product and multiplier, to find the multiplicand.

10. Given, the divisor and quotient, to find the dividend.

11. Given, the dividend and quotient, to find the divisor.

12. Given, the divisor, quotient and remainder, to find the dividend.

13. Given, the dividend, quotient and remainder, to find the divisor.

14. Given, the final quotient of a continued division and the several divisors, to find the dividend.

Bills.—Have bills on pages 119, 120, 121 prepared carefully at home. Reject slovenly work. Quick, ready work at board and on paper of simple bills, receipts and business letters in connection therewith.

SIXTH GRADE.

Addition.—Practice so that at the end of year results can be secured in two minutes in adding 15 numbers of five figures each.

Teach Civil Service method of addition; *i. e.*, add each column separately, placing final figure of each sum under the figure next to the last of the preceding sum; then add same, *e.g.*:

42675	27
39782	30
49897	25
73254	24
11219	19
	216827

Add numbers horizontally.

Add by tens and units or units and tens.

e.g.: 75
29
37 by tens and units: 63, 83, 89, 119, 126, 146, 155, 225, 230.
26 by units and tens: 63, 69, 89, 96, 126, 135, 155, 160, 230.
63

Time.—Begin in this grade to teach difference of time between two dates, results to be secured mentally.

1st. Number month when named or name it when numbered.

e.g.: January is 1 or 13 of next year.
March is 3 or 15 of next year.
June is 6 or 18 of next year.
October is 10 or 22 of next year.

5 is May.
19 is July.
8 is August.
22 is October.

After this is learned, have pupils give the difference in time between two months in months.

e.g.: January to June, 1–6, difference 5.
July to February, 7–14, difference 7.
October to June, 10–18, difference 8.

The pupil to say only 1–6, difference 5; 7–14, difference 7, etc.

The teachers should frequently read short examples from text-books and require pupils to either state or express on the board the method of solution. A logical form of analysis should be insisted on.

Occasional examples in *Long Division* should be given until it is certain that pupils can work accurately and rapidly. Be sure that all topics covered in the fifth year are thoroughly mastered.

Pupils should be given *practice* in *measuring* and *estimating* short distances in inches, feet and rods, such as the desk, their books and the room. There should be a constant review of common and decimal fractions.

Percentage.—The work in percentage should be intensely practical. In the application of percentage to business problems, excellent opportunity is offered for a practical and profitable review of fractions and of denominate numbers, the knowledge of which must be strengthened at this point.

Much good work may be done by applying percentage to fractional numbers; as, what per cent of 1/3 is 1/6? Of 4 1/2 is 1/3? 4 2/3 is 7 per cent of what number, etc.?

In same way, apply percentage to denominate numbers, *e. g.*, 10 inches is what per cent of 2 feet and 1 inch?

Teach one per cent so that pupil may give mentally one per cent of any number from 1 to 100,000. 1 per cent of 5 c. = ? 1 per cent of 1 c. = ? In dollars, dimes, etc.

The three principal cases of percentage:

B, R, (P) = B × R = P. To be read: Base and Rate given to find the Percentage. Base multiplied by rate gives percentage.

B, P, (R) = P ÷ B = R. To be read: Base and Percentage given to find the Rate. Percentage divided by Base gives Rate.

R, P, (B) = P ÷ R = B. To be read: Rate and Percentage given to find Base. Divide Percentage by Rate and result is Base.

Analyses should be continually given. Reason to one per cent, *e. g.*:

1. Find 7 per cent of 60.

1 per cent of 60 is one one-hundredth of 60 or 6 tenths. 7 per cent is 7 × .6 or 42 tenths or 4.2. Find 25 per cent of 40. 1 per cent of 40 is .4, 25 per cent is 25 × .4 or 10. Then pass to simpler business methods, *e. g.*: 7 per cent of 60 = 7 × .6 = 4.2; 25 per cent of 40 = $\frac{1}{4}$ of 40 or 10.

2. What per cent of 150 is 36?

1 per cent of 150 is 1.5, 36 is as many per cent as 1.5 is contained times in 36 or 24 or 24 per cent; or 36 is 36/150 of 150 or 6/25 or 24 per cent.

3. 90 is 30 per cent of what number?

If 90 be 30 per cent, 1 per cent is 1/30 of 90 or 3. 100 per cent or the whole number is 100 × 3 or 300.

Two derived problems:

1. R, Amt., = Amt. ÷ (1 + R) = B.
2. R, Diff., = Diff. ÷ (1 − R) = B.

1. What number increased by 20 per cent of itself = 60?

Solution—Number equal 100 per cent of itself, if increased 20 per cent the sum is 120 per cent of number or 60. 1 per cent = 1/120 of 60 or $\frac{1}{2}$. 100 per cent or number = 100 × $\frac{1}{2}$ or 50.

2. What number decreased by 20 per cent of itself = 40?

Number = 100 per cent of itself. If decreased 20 per cent, the difference or remainder is 80 per cent of the number = 40. If 80 per cent = 40, 1 per cent = 1/80 of 40 or $\frac{1}{2}$; 100 per cent = 100 × $\frac{1}{2}$ = 50.

Wherever it is possible to save time by so doing have per cents expressed as common fractions and solve by analysis. There should be constant oral work of this kind.

Quick Multiplication. Aliquot parts of 100 in eighths, first in eighths of $1, using even numbers as multiplicand.

e. g. 64 yds. cloth at 37½c. a yd. At $1 a yard the cost is $64, at 37½c. the cost is $\frac{3}{8}$ of $64 or $24.
$88 \times 62\frac{1}{2} = \frac{5}{8} \times 88 \times 100 = 5500.$
$36 \times 75 = \frac{3}{4} \times 36 \times 100 = 2700$, etc.

Interest. Develop the finding of interest by simple problems like the following:

1. "What must I pay for the use of 15 horses one week at $6 for one horse?"
2. "What for the use of $15 one year at $0.06 a year for one dollar?"
3. "What for 15 horses, 3½ weeks?"
4. "What for $15, 3½ years?"

If the idea has been developed carefully to this point, pupils should now be ready to find the interest on any sum at 6 per cent for any number of years and months. Give many examples, but do not include days.

Metric System. Review work of 5th grade. Mille (m) = 1/1000 of unit. Kilo (K) = 1000. Fix these in mind of pupil by such questions as how many milles in a deci? In a Deka? In a Kilo? Decis (d) in a Hecto? In a Deka? etc. What part of a Deka is a deci? Of a Hecto is a mille?

Have pupils fashion tables of length, capacity and weight.

e. g. 1 mm. = .03937 inch, why?
10 mm. = 1 cm. = .3937 inch, why?
10 cm. = 1 dm. = 3.937 inches, why?
10 dm. = 1 m. = 39.37 inches, why?
10 m. = 1 Dm. = 393.7 inches, why? or about 33 ft. or 11 yds.
10 Dm. = 1 Hm. = 3937. inches, why? or about 20 rds. 1/16 m.
10 Hm. = 1 Km. = 39370 inches, why? or about ⅝ m.

In the same manner have pupils fashion tables for litre = 1.0567 liquid qts., and gramme = 15.432 grains, showing that Kg. = about 2 1/5 lbs. Write these equivalents on blackboard, and change position of decimal point, requiring pupil to state instantly the metric equivalent; *e.g.*, 1.0567 qts. = 1 litre. Place pointer between 5 and 6 and demand metric equivalent, Hl. Place .0 before 1, cl., etc.

Now show to pupils how easily the metric system is notated and numerated writing in the unit, and reading in unit and giving to each figure its metric name. Parallel with U. S. money, *e. g.*, reading $365.285=36 eagles, 5 dollars, 2 dimes, 8 cents, 5 mills. The pupil should see clearly that a decimal system, though written in the unit, can be read in all denominations, *e.g.*, 4643.896 g.=4 Kg., 6 Hg., 4 Dg., 3 g., 8 dg., 9 cg., 6 mg.

The pupil is now prepared for reduction, ascending and descending. This, of course, is effected by simply changing position of decimal point and writing abbreviation of desired unit, *e. g.*, reduce, 67894 dl. to l,=6789.4 l.; to Kl.,=6.7894 Kl. 6.78 Hg. to cg.,=67800 cg.

In all these processes contrast the case with which they are accomplished with the long, tedious work that the English measurements involve.

Give this definition of the metric system, to wit: The metric system is a *decimal* system of weights and measures based upon the metre.

This definition of the metre: The metre is the *basis* of the metric system, the *unit* of *length* in that system, and is 1/10,000,000 of the earth's quadrant (pole to equator=90°).

1 degree=69.16 miles. Have pupils reduce metre to inches.

SEVENTH GRADE.

Addition. Heed suggestions of sixth grade. Practice addition of 20 numbers of 5 figures each, so that at end of year every pupil can obtain accurate result in two and one-quarter minutes.

Pupil adds aloud by units, tens and hundreds, and hundreds, tens and units. 5 numbers of 3 figures each, *e. g.:*

376
289
261
405
262

By units, tens, hundreds. 262, 267, 667, 668, 728, 928, 937, 1017, 1217, 1223, 1293, 1593.

By hundreds, tens, units. 262, 662, 667, 867, 927, 928, 1128, 1208, 1217, 1517, 1587, 1593.

Multiplication. Present this table.

	10	100	1000
$\frac{1}{8}$	$1\frac{1}{4}$	$12\frac{1}{2}$	125
$\frac{2}{8}=\frac{1}{4}$	$2\frac{1}{2}$	25	250
$\frac{3}{8}$	$3\frac{3}{4}$	$37\frac{1}{2}$	375
$\frac{4}{8}=\frac{1}{2}$	5	50	500
$\frac{5}{8}$	$6\frac{1}{4}$	$62\frac{1}{2}$	625
$\frac{6}{8}=\frac{3}{4}$	$7\frac{1}{2}$	75	750
$\frac{7}{8}$	$8\frac{3}{4}$	$87\frac{1}{2}$	875

This can be made very useful.

First. State instantly $\frac{3}{8}$ of 10, 100, 1000; $\frac{5}{8}$ of 10; $\frac{3}{4}$ of 100, etc.

Second. $10 \times \frac{1}{4} = 2\frac{1}{2}$; $100 \times \frac{5}{8} = 62\frac{1}{2}$; $1{,}000 \times \frac{7}{8} = 875$, etc.

Third. $\frac{1}{10}$ of $62\frac{1}{2} = 6\frac{1}{4}$; 1% of $37\frac{1}{2} = \frac{3}{8}$; $\frac{1}{100}$ of $875 = 8\frac{3}{4}$; 10% of $37\frac{1}{2} = 3\frac{3}{4}$, etc.

Fourth. $10 \times 1\frac{1}{4} = 12\frac{1}{2}$; $100 \times 2\frac{1}{2} = 250$; $10 \times 7\frac{1}{2} = 75$, etc.

Apply this to quick multiplication, *e. g.:*

$68 \times 75 = 68 \times \frac{3}{4} \times 100$. If 75 cents, $68 \times \frac{3}{4} = \$51$.

In the aliquot parts of 10, if the multiplier represents cents, figure for 10 cents first by moving decimal point one place to left, *e. g.:*

Cost of $376\frac{3}{4}$ yards @ $8\frac{3}{4}$ cents.

Solution.

37.675 = cost @ 10 cents.
4.709 = cost @ $1\frac{1}{4}$ cents.
32.966 = cost @ $8\frac{3}{4}$ cents.

Give simple problems, to be solved mentally. Demand, after practice, quick work.

Time. Review work of sixth grade. Next practice pupils to name quickly months containing 31 days. Pupils can now practice on calculating the exact time in days between same dates in any two months, regarding a month as 30 days, and adding 1 day for every 31-day month, *e. g.:*

January 20 to June 20. Difference in months = 5. January, March, May = 3. February, 2 days off, = 1 day to add. 5 months + 1 day = 151 days. March 10 to December 10 = 9 months. March, May, July, August, October = 5 days to add. 9 months, 5 days = 275 days.

Last step, if dates be different: Find difference in days between months. Subtract dates; if latter be larger add to number of days; if smaller, subtract.

E. g., Days from April 10th to July 17th.
April to July, 3 months + 2 days = 92 days. Difference oi dates 7 days to add, 92 + 7 = 99 days.

Days from October 17th to March 12th.
October to March, 5 months. October, December, January to add, 2 off for February = 1 day to add = 151 days. Difference in dates, 5 days to subtract = 146 days.

Compound substraction in time, exercise 230, State arithmetic.

Interest should be taught by the 60-day 6% method.

1. In 200 mos. or 6,000 days interest equals principal.
2. For 20 mos. or 600 days move decimal point 1 place to left. (Why?)
3. For 2 mos. or 60 days move decimal point 2 places to left. (Why?)
4. For 6 days move decimal point 3 places to left. (Why?)

E. g., $476. Interest at 6 % for 6,000 days or 200 mos. = $476. For 20 mos. or 600 days = $47.60. For 60 days or 2 mos. = $4.76. For 6 days = $.476.

For 7 %, to the interest @ 6 % add $\frac{1}{6}$ of itself.
For 8 %, to the interest @ 6 % add $\frac{1}{3}$ of itself.
For 7½ %, to the interest @ 6 % add $\frac{1}{4}$ of itself.
For 8½ %, to the interest @ 6 % add $\frac{1}{3}$ of itself, and $\frac{1}{4}$ of that. (Why?)
For 4½ %, from the interest @ 6 % subtract $\frac{1}{4}$ of itself, etc.

Time is the Important Factor of Interest.

First, the rapid mental calculation between two dates, and second, how to immediately, in the briefest manner, apply the time to the 60-day 6 % method.

Have pupils study how to best figure the interest for 1 day (⅙ of 6 days); 2 days (⅓ of 6 days); 5 days (6 days, ⅙ or 1/12 of of 60); 13 days (⅙ of 60 + ½ of 6); 22 days (⅓ of 60 + 1/10 of that), etc.

Problem :

What is the interest of $372.60, from May 10th to November 12th, @ 9¾ %.

Solution :

May 10th to Nov. 12th, = 186 days.
$3.726 = interest for 60 days.
3
$11.178 = interest for 180 days.
.372 = interest for 6 days.
$11.55 = interest for 186 days @ 6 %.
5.775 = interest for 186 days @ 3 % (= ½ of 6 %).
1.444 = interest for 186 days @ ¾ % (¾ = ¼ of 3).
$18.769 = interest for 186 days @ 9¾ %.

What is the interest of $572 from June 23d to January 7th @ 3½ % ?

Solution.

June 23d to January 7th = 198 days.
$57.20 = interest 600 days.
19.067 = interest 200 days (⅓).
.19 = interest 2 days (1 % of 200 or ⅓ of 6 days).
18.877 = interest 198 days @ 6 %.
9.44 = interest @ 3 %.
1.57 = interest @ ½ % (1/6 of 3 %.)
11.01 = interest @ 3½ %.

What is the interest of $540 from August 20th to December 11th @ 7½ %?

Solution.

Time, = 113 days.
$11.30 for 600 days.
1.13 for 60 days.
10.17 for 540 days @ 6 %.
2.54 for 540 days @ 1½ %.
12.71 for 540 days @ 7½ %.

Note.—Time and principal being factors of interest they may be used interchangeably. All so-called lightning methods consist in multiplying principal by number of days, pointing off and dividing, but they do not permit of such quick work as can be secured by the 60-day 6-per-cent method.

Taxes, Insurance.—Profit and Loss and Commission are but modifications of Percentage, so present them.

Explain the assessment and collection of taxes for the State and City.

Metric System.—Review work of sixth grade and consider square and cubic measurement. Tables as before, except that in square 100 of a lower equal 1 of the next higher denomination and in cubic measure 1,000. Have pupil state why. Stere is never used; instead its equivalent cubic metre = 35.317 cubic feet.

EIGHTH GRADE.

Addition. Review work of seventh grade and so drill pupils that at the end of the year they can secure the accurate sum of 20 numbers of five figures each in 2 minutes.

Multiplication. By mean: when two numbers have units adding to 10 and tens in immediate succession, *e. g.*:

86 × 94, from square of the tens of larger number, 8100, subtract square of units of smaller number, 16 = 8084.

73 × 87 = 6400 − 49 = 6351, etc.

When tens are same and units add to 10:

Multiply units, for tens and units of product, add 1 to one of the tens and multiply by the other.

$$86 \times 84 = \left\{ \begin{array}{r} 4 \times 6 = 24 \\ 9 \times 8 = 72 \\ \hline 7224 \end{array} \right.$$

$$73 \times 77 = 5621, \text{ etc.}$$

By study of table given in seventh-grade work, a large number of combinations can be devised for abbreviating multiplication, *e. g.*: Cost of 378¼ yds. @ 13⅞ c.

$$\begin{array}{rl} 8)\underline{378.25} & \\ \$47.28 = & \text{cost @ } 12\tfrac{1}{2} \text{ c.} \\ 4.73 = & \text{" @ } 1\tfrac{1}{4} \text{ c. } (1/10 \text{ of } 12\tfrac{1}{2} \text{ c.)} \\ \underline{.47} = & \text{" @ } \tfrac{1}{8} \text{ c. } (1/10 \text{ of } 1\tfrac{1}{4} \text{ c.)} \\ \$52.48 & \end{array}$$

$$\begin{array}{rl} \underline{876\tfrac{5}{8} \text{ lbs. wool}} & \text{@ } 16\tfrac{7}{8} \text{ c.} \\ \$87.662 = & \text{cost @ } 10 \text{ c.} \\ 43.831 = & \text{" @ } 5 \text{ c. } (\tfrac{1}{2} \text{ of } 10 \text{ c.)} \\ 10.958 = & \text{" @ } 1\tfrac{1}{4} \text{ c. } (\tfrac{1}{4} \text{ of } 5 \text{ c.)} \\ \underline{5.479} = & \text{" @ } \underline{\tfrac{5}{8}} \text{ c. } (\tfrac{1}{2} \text{ of } 1\tfrac{1}{4} \text{ c.)} \\ \$147.93 = & \text{" @ } 16\tfrac{7}{8} \text{ c.} \end{array}$$

and so for scores of combinations.

Interest.—Review seventh-grade work in 6% 60-day method. This yields ordinary business interest, 360 days to the year. To obtain accurate interest subtract from ordinary 1⅓% of itself and one cent more for every 27 dollars of ordinary interest. *E. g.*, presume ordinary interest is found to be

$$\begin{array}{rr} & \$76. \\ & \underline{1.04} \\ \text{Acc. Int.} = & 74.96 \end{array} \qquad \begin{array}{rl} \$\ .76 & = 1\ \% \\ .253 & = 1\tfrac{1}{3}\ \% \\ \underline{.027} & \text{(1 cent for every \$27 in \$76.)} \\ 1.04 & \end{array}$$

Metric System.—Review seventh-grade work. All units being based on the metre, measurements can be reduced immediately to capacity or weight.

Hints.

cm × cm × cm = cubic cm or grams of water.

dm × dm × dm = cubic dm or Kg of water or litres of anything.

m × m × m = cubic m or Tonneaux of water or Kl of anything.

Explain why.

Short methods of reduction of metric to English measurement.

1. Metres to yards. Add 1/12 and 1% of number of metres to itself.

e. g.: 296. m
24.66
2.96
323.62 yds.

2. Kg to lbs. Multiply Kg by 2, add 1/10 of result to itself and add 2 lbs. for every 1000.

ex.: 216 Kg
2
432
43.2
475.2
1
476.2

3. l to gallons. Multiply by 2.11 and divide by 8.
4. Hl to bushels. Multiply Hl by 3, substract 1/20 and subtract 4 bushels for every 1,000 of result.

GEOGRAPHY.

This study, which formerly comprised only the memorizing of the location of thousands of more or less important places, has come to be considered as embracing an examination of the earth as the home of man.

The pupil must be led to notice the direction and effect of winds; of heat and cold, as in dew, rain, frost, snow; the wearing away of higher lands, the reasons for the location of cities, the difference of climate and of plant and animal life, and must be led to see how man is affected by these facts and phenomena. He should compare the forms of outline and relief of countries, and understand the relations of these facts to the course of rivers and the productions and commerce of the countries.

Geography and history are in several points correlative. Geographical information is better understood and becomes far more interesting when it has a human interest, such as history adds. Let this be remembered, especially when the geography of this country is being taught.

In the lowest grades no formal lessons in geography are given, but the ground for future work is prepared by having children gain correct conceptions of color, form, size, position, distance, time. These can be obtained largely in connection with lessons based on work with objects and observations of natural phenomena and of social life. Such lessons must be adapted to the capacity of the pupils. Each lesson should be carefully planned by the teacher, that she may have a definite purpose and method in mind and may obtain an equally definite result.

The basis of political geography is physical geography. In teaching the facts of physical geography, the statement of the famous geographer, Ritter, "Wherever our home is, there lie all the materials which we need for a study of the entire globe," and Humboldt's truism, "Every little nook and corner is but the reflection of the whole of nature," furnish the key to the proper method.

The geography of our own State and country should receive much attention. The boundaries of the States should be learned gradually, commencing in the fifth grade.

The subject-matter of each lesson should be explained when a text-book lesson is assigned.

Map-drawing should be undertaken in an elementary way in the third grade. Maps should be copied or traced at first; later, maps of regions with which pupils are familiar may be drawn from memory. Pupils should be neat in this work, on which much time must not be spent, since a map is merely a means, not an end. Constant use of maps in locating places, countries, etc., not only in geography but in history.

Local observation should begin with the earliest nature study. Geographical features in the immediate neighborhood of the school should be pointed out, described in the simplest terms, and named. The most elementary physiographic processes connected with rainfall and surface washing may be pointed out at the same time. No original observation or description should be required at this stage. It is enough that young scholars make an imitative beginning in talking geography as they do in talking English.

Identification of simple features, such as hills, streams, roads, in their representation on the local map, may be soon introduced. This corresponds to the linear and locative work above. It may be well to precede or to accompany this stage of the work with a few very simple exercises in drawing small outline maps from observation, but these exercises should never be made laborious.

The beginnings of observation, identification and inquiry may be made in the first year of nature study. All these phases of study should be continued in later years, with advance in quality and detail, and with addition of new phases. When the study of geography is formally taken up with a text-book, especial care should be taken to illustrate the topics of the text by local features, as far as possible. By a little consideration, the observations of previous years may be directed so as to provide an acquaintance with a good number of those classes of facts whose description is encountered in the early pages of the text-book. Exercises in forms and surfaces (areal work), and in physiographic and industrial relations, should accompany the progress through the text.

While inquiry as to the meaning and origin of geographical features should be encouraged and satisfied at all stages of study, systematic and scientific instruction in this physiographic chapter of geography is best left to the high school.

UNITED STATES HISTORY.

It is to be hoped that the study of the history of our country and its great men will not merely acquaint the pupils with important facts, but will serve to develop in them a true patriotism and to cultivate those moral qualities which they see have made men famous and our country great.

It should be remembered that patriotism is not partisanship or sectionalism, and that to love one's own country or locality does not necessitate despising or decrying other countries or localities.

It is easy to arouse in the minds of the pupils the deepest scorn and contempt for the individuals and institutions of the nations with which our country has been at war; but this is not consistent with either good history or good morals, nor is it productive of the best citizenship.

The following extracts from the Report of the Conference on History to the Committee of Ten contain many valuable suggestions as to the aim of this study and the principles underlying the methods to be used:

"To sum up, one object of historical study is the acquirement of useful facts; but the chief object is the training of the judgment in selecting the grounds of an opinion, in accumulating materials for an opinion, in putting things together, in generalizing upon facts, in estimating character, in applying the lessons of history to current events, and in accustoming children to state their conclusions in their own words.

"Questions in recitation ought not to demand from pupils only a repetition of the phrases or ideas of the book, but ought to call for comparison and comment of points from previous lessons and to bring in illustrations from parallel subjects.

"How far should pupils be expected to memorize? 'A few things should be learned by heart, and, when forgotten, learned again, to serve as a firm groundwork upon which to group one's knowledge; without knowing the succession of dynasties, or of sovereigns, or of presidents, or the dates of the great constitutional events, the pupil's stock of information will have no more form than a jelly-fish.' But those few necessary facts ought to be clearly defined as only a framework to assist the memory."

"An excellent suggestion is that of 'open text-book recitations,' in which, with open books, pupils are asked questions on cause and effect, on relations with previous lessons, etc.; answers may be written or corrected in class."

"Such a system tends to encourage the habit of applying what one knows to a new problem. Still more helpful in the same direction are the off-hand discussions and impromptu debates which spring up in an eager class, and which should be encouraged by every good teacher."

* * *

"Geography, the twin sister of history, has as yet had but a cold reception in the historical family. Only about one-half the schools make the study what it should be,—an essential and integral part of the study of the period. Our recommendation on this subject is set forth in Resolution 25. 'That the study of history should be constantly associated with the study of topography and political geography, and should be supplemented by the study of historical and commercial geography, and the drawing of historical maps.'"

PRIMARY GRADES.

In the primary grades the memory is stronger than the reasoning powers, and history must be mainly a record of simple facts and interesting events. The deeds and customs of people in our own and other countries may be described by the teachers or read by the pupils and then repeated in the language and composition lessons. Anniversaries and special seasons of the year will afford many opportunities for teachers in primary grades to turn the minds of pupils toward historical and biographical subjects. Such books as "American History Stories," Eggleston's "Stories of Great Americans for Little Americans," can be used by teachers with profit.

In the higher grades the aim in American history should be to give a clear understanding of the development of our city, state, and national life, socially, politically and territorially.

SIXTH GRADE.

Pupils of the *sixth* grade, by Harr Wagner's "Pacific History Stories," are informed in a most pleasing manner of the history of our beloved California. After completing this book, teachers will instruct pupils orally from the State text-book of United States history, first 46 pages.

SEVENTH AND EIGHTH GRADES.

In the seventh and eighth grades certain great historical movements should be kept in view in teaching the development of the United States.

First.—From the discovery of America to the close of the French and Indian wars the great question is, What nationality and what language are to dominate in North America? All discoveries, explorations, settlements and wars are more or less important as they bear on the decision of this question.

Second.—After English domination is established another question presents itself,—Is America to be a dependency of England, or to cut loose from the mother country? The antecedents of the Revolutionary War, and the war itself, should be studied with this question in view.

Third.—Scarcely is the problem solved before another begins to demand attention. Are the independent colonies to be separate nations, a loose aggregation of States, or one nation? The history of the Articles of Confederation, the disputes on the adoption of the Constitution, the position of the early political parties, the acquisition of territory, the slavery troubles, all culminating in the Civil War, should all be studied with the main question before the mind.

The boy or girl who is brought to understand and feel these questions, and has learned a sufficient number of facts and details, may be said to understand American history.

CIVIL GOVERNMENT.

Whatever theory we may hold in regard to the comparative value of different subjects of study, all will agree that a public school should not fail to give the young some direct preparation for citizenship. Indeed, it is suicidal to spend enormous sums of money to maintain schools from which pupils go away knowing nothing of our institutions, unable to tell even how the President of the United States is chosen.

The course in government, like that in geography, is so arranged that the facts which are nearest and naturally most familiar are presented first. The city, the county, the State, are considered before the Federal Government. This order is followed by several of the best writers on the subject. At first only the most important facts are given, these subjects being presented again, and more in detail, when the pupils are older and better able to comprehend them. The teacher should encourage reading, inquiry and thinking, especially in the higher grades. Instil civic pride and a sense of the danger to the country arising from official corruption. Show the need of placing public interests above private gain. Insist on the principle that every office exists solely for the benefit of the people and never for an individual or a party.

The instruction is to be conversational rather than formal. In the lower grades it should be given in connection with geography, and in the higher in connection with history.

SCIENCE.

The amount of time necessary for the proper treatment of nature study is considerable. The presentation of studies required by law crowds the curriculum of a day's work of about four and one-half hours, especially in the grammar grades. The only feasible plan, therefore, is generally to correlate nature study with reading, composition and drawing.

Owing to the strengthening of the school work this year omission of systematic nature study is believed to be best. Unless accompanied by specific directions from definite work in text-books, all degrees of efficiency, and in many cases loss of time, are to be expected.

Elementary physics, owing to its intensely every-day, practical character, should receive attention in the upper grammar grades.

The study of physics, besides being distinctly utilitarian, has in view the sharpening of the powers of observation and the forming of the habit of studying purposes, causes and effects, and the general adaptability of means to ends desired.

It is conceded by all engaged in the machine shop that a knowledge of physics is indispensable for superior workmanship. It is essential in connection with the physical portion of geography, necessary to a comprehension of the surrounding phenomena in nature.

Properties of matter, motion, energy, force, work, should be comprehended. It should be the aim not to teach results merely, but to show how these results have been reached, and what practical use is to be made of them, and thus inspire the pupil with enthusiasm in work of questioning Nature. Precedence should be given everywhere to the practical,—the steam engine, the electric motor, the telephone and telegraph ; even the simplest tools should be shown to be machines, or devices, by which energy of some form is made to do useful work for man.

WRITING.

The aim should be to secure, first, legibility ; second, speed ; third, beauty.

Yielding to the almost unanimous demand of the teachers of the Department for vertical penmanship, the Board of Education adopted the California System.

The writing of the pupils while preparing other lessons is of more importance than the lesson on penmanship. If the former is allowed to be careless and formless, the latter is a waste of time. The enthusiastic and persistent personal effort of the teacher is necessary if good results are to be shown.

The cramped and painful position of the hand of the child commencing to learn to write should be overcome in the primary grades, and an easy and natural position and method of holding the pen should be acquired.

Practice without effort not only wastes time, but confirms incorrect habits, and is a positive loss to the pupil. Spasmodic efforts, in which pupils are informed of the proper position, but soon allowed to assume whatever attitude of hand or body they may choose, will accomplish nothing.

Have pupils criticise letters made on blackboard.

Exhibit such slates, papers and books as evince care.

Ink cells should be cleaned and filled once a week by the janitor. Cells should be kept closed when pupils are not writing.

Constant supervision is needed to see that no one throws ink on the floor from pens.

Pens should be wiped and properly cared for when laid aside.

DRAWING.

"Thompson's Educational and Industrial Drawing" has been adopted for exclusive use in all the schools of the department for four years. The Primary Freehand Series is intended for the first four grades, but the assignment of books for 1897-98 places some of these books in higher grades for freehand drill, preliminary to the more difficult work. It is believed that this arrangement will give the easiest introduction to the system.

Grade	I,	Thompson's	Primary	Freehand	No. 1.
"	II,	"	"	"	No. 1.
"	III,	"	"	"	No. 2.
"	IV,	"	"	"	No. 3.
"	V,	"	"	"	No. 3.
"	VI,	"	"	"	No. 4.
"	VII,	"	Model and	Object	No. 1.
"	VIII,	"	"	"	No. 1.

Advanced eighth grade, Thompson's Educational and Industrial Drawing, Mechanical Series No. 1.

The Model and Object Series No. 1 should always be done before No. 2 of the same series is attempted. By 1898-99 the ultimate course can be carried out. Syllabi, with more complete directions, will be issued later.

Drawing-books are to be used after practicing the lesson on drawing paper; model or object in hands of teacher.

MUSIC.

The object of the course of study under this head is to secure for our pupils the ability to read with facility ordinary music at sight. Its object is not merely to make singers.

Music is a language; indeed, it is one of the only two universal written languages of the civilized world, the other being the language of lines,—drawing.

The systematic teaching of vocal music in the schools is now no longer regarded simply as an accomplishment, but rather as a regular branch of the school curriculum, and that for its educational value.

Music to-day enters so largely into our social life that it can no longer be permitted that children should spend eight or nine years in our schools, and leave them entirely ignorant of musical notation.

The refining influence of music in the home circle is such that its benefits should not be limited to the rich, but should be made the common possession of all, both rich and poor. Music is invoked in our hours of rejoicing and of sorrow; in worship and in praise; at the christening, the wedding, and at the funeral. It is, therefore, the part of wisdom that the systematic teaching of vocal music is made an important part of our public school training—indeed, is justly regarded as one of the essentials.

Principals and teachers are therefore enjoined to follow loyally and conscientiously, as in other branches, the course of study marked out in this. All teachers, whether they can sing or not, should be able to teach, at least the rudiments, of musical notation. However, if any are found absolutely deficient in this branch of school work, principals are authorized to make such necessary temporary transfers of teachers for the music lesson as shall secure to each class thorough and competent training, in accordance with the course here given.

The books and charts of the course adopted for exclusive use in our schools, to wit, The Natural Course in Music, have been planned and constructed with the aim constantly in view of training children to read music; and teachers should, therefore, familiarize themselves with the plan and scope of the work, and follow the instructions and directions found in the books and on the charts. If the exercises given in each book are conscientiously followed, pupils should be able to read at sight the song which follows such exercises.

For class and general exercises there will be found, in section three of each book, devotional and patriotic songs, which are the same in all the books of the series. In the lower grades any of these songs may be taught by rote.

Procure copies of "Hail, California" from the storeroom.

ASSIGNMENT OF BOOKS AND CHARTS TO GRADES.

First Grade.—No book nor chart need be provided for this grade. Children should be taught to sing a few songs by rote, and receive training on the scale. Suggestions for this latter may be had from consulting chart A.

Second Grade.—The pupils of this grade may not be required to purchase any book, but should be thoroughly trained on chart A.

Third Grade.—The use of the Primer in the hands of the children to page 51, and training upon chart B.

Fourth Grade.—The use of the Primer in the hands of the children, review and completed from page 51, and chart C.

Fifth Grade.—First Music Reader, and chart D.

Sixth Grade.—Second Music Reader, and chart E.

Seventh Grade.—Third Music Reader, and chart F.

Eighth Grade.—Fourth Music Reader, and chart G.

Advanced Eighth Grade (or first year in High School).—Fifth Music Reader.

N. B.—In the grades up to and including the fourth, the above course must be followed in all schools.

In those schools in which music has heretofore received so little systematic attention that the pupils of the grades above the fourth are not prepared to follow the course as given above, principals are authorized to organize their pupils into special classes for the music exercises during this school year, following the course given above, as nearly as practicable, with the aim of being able to adhere to it strictly in all respects after this present year.

TEMPERANCE PHYSIOLOGY, MORALS AND MANNERS AND HUMANE EDUCATION.

"Instruction must be given in all grades of schools and all classes, during the entire school course, in manners and morals, and upon the nature of alcoholic drinks and narcotics and their effects upon the human system."—*State School Law of California, Section 1667.*

"It shall be the duty of all teachers to endeavor to impress upon the minds of the pupils the principles of morality, truth, justice and patriotism; to teach them to avoid idleness, profanity and falsehood; to instruct them in principles of free government; and to train them up to a true comprehension of the rights, duties and dignity of American citizenship."—*State School Law of California, Section 1702.*

Morals and manners should be continually observed and commented on. There should be a constant effort to impress upon the child's mind the great lessons of truth, justice and purity. Proper conduct on the playground and the street should be discussed.

Every opportunity should be seized to inculcate in the minds of the pupils the importance of self-control, decision of character, perseverance, self-denial, industry, punctuality, order, economy, honesty, truthfulness, cleanliness and self-respect.

Other topics will be suggested to the thoughtful teacher by occurrences that come under her observation in the schoolroom and elsewhere.

In all grades, teachers should embrace every convenient opportunity to instruct their pupils in morals and manners. The following list of topics will supply bases for many interesting talks:

Duty to parents, to brothers and sisters, to playmates, to the aged, to the poor and unfortunate, to the ignorant and stupid, to strangers and foreigners, to the public, to one's country.

Home manners, table manners, school manners, street manners, manners in public assemblies and in public conveyances.

The teaching of temperance physiology is now required by law in all grades.

In the first five years hygiene and physiology must be taught orally and simply, the teacher using the State Physiology as a hand book. In the sixth, seventh and eighth grades the text-book is in hands of pupils.

The proper treatment of dumb animals should be considered and an effort made to lead pupils to be humane and considerate. This is emphasized by using "Heart Culture," by Emma E. Page, Lecturer for National Department of Mercy.

In the second grade teach "Heart Culture" book I.
Third Grade, "Heart Culture" book II.
Fourth Grade, "Heart Culture" book III.
Fifth Grade, "Heart Culture" book IV.

Organize "Bands of Mercy" by having children take this

PLEDGE:

"I will try to be kind to all living creatures, and will try to protect them from cruel usage."

Superintendent's circular on this subject later in year.

MANUAL TRAINING AND PHYSICAL CULTURE.

The aim of the work of this department may be drawn from the following brief claims made for it by many of those in the best positions to observe its influence upon students in training.

Brain cells develop through activity; atrophy is the result of disuse.

The nascent period for the different forms of manual dexterity ends with the fourteenth or fifteenth year.

The area of the brain which controls the hand and arm is much larger in proportion than that for any other part of the body except the face, giving the hand as much importance as the eye, the ear or the tongue.

An untrained hand is a great disadvantage.

One mind receives and discharges impressions best through the medium of things, another through words, the symbols of things. They should have an equal chance.

Just as good brain power is used in one case as the other. Manual skill is as difficult to acquire as mathematics or language.

Almost all higher education is planned for non-mechanical classes, which constitute about one-fourth of the population of the country.

Much of the traditional school work makes for bodily destruction ; manual training, for bodily growth and muscular control.

Manual training tends to prevent waste of time. The average student is capable of direct mental application about three hours daily.

Manual training supplies a knowledge of the facts and forces of the tangible, living, active world of to-day, its buildings, machinery, processes—just as other branches of study do for history, literature and science.

Manual training develops sympathy for manual labor. It multiplies interests and broadens the field from which to select a final calling.

Manual training reinforces other departments.

It stimulates perception, logical thinking, good judgment, the productive imagination.

It encourages truthfulness, self-control, firmness of will, and is a strong factor in ethical culture.

The work in sewing gives instruction in all the branches of this important subject. The aim is to train the pupil to habits of carefulness and neatness, as well as to equip her for usefulness and independence in this art.

The work in manual training and physical culture is conducted by special instructors.

Carpenter work and cooking are studied at four grammar schools, which may be designated as central stations to which pupils of those schools and others within a prescribed radius report for instruction.

Sewing is conducted in a few schools.

Work of special teachers is to be defined by circulars from office of Superintendent.

Manual training is conducted on advanced and progressive lines in the Polytechnic High School, where the student receives an academic training that prepares him for matriculation in the University, and a consistent, harmonious training of the eye and hand.

The teacher is directed not only to the exercises for physical culture contained in the State Physiology, but to Enebuske's Progressive Day's Orders and the directions of special teacher of physical culture.

Encourage an ambition for physical strength, and a handsome, well-formed physique. Erect carriage, elastic step, full chest, should be emphasized, and directions for their attainment given. "*Mens sana in corpore sano*" is the state of perfect manhood and womanhood.

COURSE OF STUDY

FOR THE

Lowell High School

(Sutter St., bet. Octavia and Gough),

FRANK MORTON, Principal,

AND FOR THE

Girls' High School

(Scott St., corner of Geary St.),

ELISHA BROOKS, Principal,

—— AND ——

Mission High School.

LOWELL HIGH SCHOOL.

[This course of study has also been adopted for the Girls' and Mission High Schools, and is to be followed until further instructions are issued from the Superintendent's office.]

Arranged for four years upon the basis of twenty recitations per week, of forty-five minutes each. (Although the full number of twenty recitations per week is called for at the beginning, outside preparation is required for not more than fifteen recitations per week in the first year.)

FIRST YEAR.—Age at the beginning, 13-14.

(Particular aims for this year are quick and accurate recollection, correct and vivid reproductive imagination.)

English, 4 periods. Extensive reading of narrative and descriptive literature, prose and poetry, giving a wide range in the world; word-study, etymological and contextual; implemental forms and classifications; narrative and descriptive writing.

Latin, 4 periods. Simple reading to acquire the largest vocabulary of common words; grammatical forms; simpler and more common rules of syntax; practice in the pronunciation and use of all words acquired.

Science, 3 periods. Descriptive work on plants and animals; records of observations broadly made; physiology.

History, 4 periods. Reading and reproduction of selected biographies of ancient history; geography of the Mediterranean basin and western Europe; story of English national life; more detailed study of ancient arts and industries.

Mathematics, 2 periods. Study of number relations with a view to develop and strengthen the notion of pure number, or ratio; study of the numerical equation; drill in quantitative relations, using general terms as in algebra; simple algebraic operations.

Drawing, 3 periods. Drawing from natural objects, as flowers, etc.; representative drawing, including geometrical models,—shading, grouping, perspective; drawing applied to actual forms—black and white—from casts or models, embracing the study of light and shade.

SECOND YEAR.—Age at the beginning, 14-15.

(Particular aims for this year are analytic reflection to place simple forms in the mind and equal accompanying effort in synthesis to apprehend relations; no especial effort to generalize.)

English, 3 periods. Systematic course in grammar; sentence analysis, definitions, synonyms; rhetorical, logical and esthetic modes of analysis; summaries, abstracts, essays; grouping of formal units of expression; pieces of literature grouped and related.

Latin, 5 periods. Translation both ways; analysis of grammatical forms; word formation; induction to more complex rules of syntax, word-order, sentence and paragraph structure.

Science, 4 periods. (Elective with Greek the last half year.) Biology, dissection and cell-study; elementary chemistry; mechanics.

History, 3 periods. Close and analytic study of particular Greek states; military history of the Greeks; building of the Roman Empire.

Mathematics, 4 periods. Algebra; introduction to the study of geometry as a formal subject, to secure familiarity with the language and concepts of geometry.

Drawing, 1 period. Descriptive work as applied in conventional designs, including arrangement, harmony and relation of decoration in various designs, and in use in different industries.

THIRD YEAR.—Age at the beginning, 15-16.

(Particular aims for this year are constructive thought, employing judgment and arriving at proof; larger power of generalization.)

English, 3 periods (but only 2 periods for those taking Greek). Systematic reading; essay work of synthetic, expository and inventive character.

Latin, 4 periods. Extensive rapid reading; application of principles in Latin composition.

Science, 5 periods (but only 2 periods for those taking Greek). General physics.

History, 3 periods. Roman political development; foundation of modern European states; national beginnings.

Mathematics, 5 periods (but only 4 for those taking Greek). Geometry, plane and solid; complete algebra (except for Greek students).

French or German, elective with science.

Chemistry, elective with solid geometry.

FOURTH YEAR.—Age at the beginning, 16-17.

(Particular aims for this year are reasoning to find and establish cause; reflection directed inward toward clearer apprehension of self in moral relations; contemplation of moral ideals. With the exception of English and United States history and institutions, all studies are elective, subject to the approval of the Principal.)

English, 4 or 5 periods (but only three in the last half year for those taking both Latin and Greek). Theory of clause relations, sentence and paragraph sequence; relation of form to expression; study and comparison of style; motive and character in the drama and the novel; argumentative discourse; study of ideals and ethical content of masterpieces.

Latin, Greek, French or *German,* 4 periods. (According to previous election or particular needs of pupils.)

Science, 3, 4 or 5 periods. Advanced work in physics; theory. General course for those not taking science in the third year, or taking it but 2 periods, 4 periods.

History, 5 periods (but omitted in the first half year with those taking both Latin and Greek). Selected forms and ideals of the Middle Ages; development of modern Europe, based chiefly upon France and England; history and institutions of the United States.

Mathematics.—3 periods (but 4 periods in first half year for those taking both Latin and Greek). Required of deficient pupils, according to their needs; otherwise this time may be assigned according to pupil's choice and advice of teachers. Trigonometry and analytic geometry may be chosen; or a course in instrumental drawing as applied, mathematics to include: (a) geometrical problems, mathematical curves, lettering; (b) descriptive geometry, perspective, isometric perspective, shade and shadows; (c) drawing of simple machine parts from objects; (d) architectural drawing, including the five orders, study of styles, combinations and blending of different styles; (e) history of architectural styles. Greek students will complete algebra.

SCHEDULE OF RECITATIONS PER WEEK.

Year.	I	II	III	IV
English	4	3	3[1] or 2[1]	5[1], 4[1] or 3[1]
Latin	4	5	4	(4)
Greek	..	4[7]	(5)	(4)
French	..	..	(5)	(4)
German	..	..	(5)	(4)
Science	3	4[7]	5[2] or 2[2]	3 or 4[3]
History	4	3	3	5[4]
Mathematics	2	4	5[5] or 4[5]	3 or 4[6]
Drawing	3	1		
	20	20	20	20

1. Number of hours dependent upon amount of work in other languages.

2. Pupils taking a modern language for two years will postpone this work until the fourth year; those taking Greek for half year will take science but two periods.

3. Three hours for those who have had five periods of science in the third year; otherwise four.

4. Elective for half of the year.

5. Elective for a part of the year with chemistry; but four periods for those taking full classical course.

6. Four periods in first half year in full classical course.

7. First half year science and second half Greek in full classical course.

TEXT-BOOKS.

English.—Kellogg's Rhetoric; Reed and Kellogg's Higher Lessons in English or Whitney's Essentials of Grammar; Longfellow's Evangeline; Whittier's Snow-Bound; Lowell's Vision of Sir Launfal; Scott's Lady of the Lake; Shakespeare's Merchant of Venice and Julius Cæsar; Irving's Sketch Book; Thackeray's Newcomes; Macaulay's Warren Hastings; Gayley's Classic Myths; Syle's From Milton to Tennyson; Thurber's Select Essays of Addison; Bradley's Orations and Arguments; Brooke's English Literature.

Latin.—Harper and Burgess' Inductive Latin Primer or Tuell and Fowler's First Latin Book; Harkness' Latin Grammar; Harkness' or Allen and Greenough's Cæsar; Harkness' or Allen and Greenough's Cicero; Greenough and Kittridge's Virgil; Daniell's Latin Composition; Viri Romæ; Via Latina; Nepos; Selections for Sight Reading by Post.

Greek.—White's First Greek Book; Goodwin's Greek Grammar; Goodwin's Anabasis; Seymour's Iliad; Collar's Greek Composition.

Mathematics.—Stringham's Smith's Complete Elementary Algebra; Beaman and Smith's, Edward's or Venable's Geometry; Bowser's Elements of Trigonometry.

History.—Fisher's General History; Myer's History of Greece; Bryan's and Hendy's Roman Republic; Emerton's Introduction to the Middle Ages; Guest and Underwood's Handbook of English History; Fiske's Civil Government.

Science.—Remsen's Introduction to the Study of Chemistry; Appleton's School of Physics or Steuart's Lessons in Elementary Physics; Colton's Practical Zoology.

German.—Joynes' and Meissner's German Grammar; Brandt's German Reader; Collar's Shorter Eysenbach.

French.—Keetel's French Grammar; Fassnecht's Composition; Daudet's La Belle Nivernaise; Verne's Le Tour du Monde.

Geology.

Mineralogy.

Latin in all classes.

Drawing in all classes.

A HIGH SCHOOL COURSE.

F. H. CLARK, LOWELL HIGH SCHOOL, SAN FRANCISCO.

In response to the questions regarding High School studies sent out by the University Conference Committee, the faculty of the Lowell High School of San Francisco decided to undertake a full discussion of the subject-matter with the hope of reaching some well-founded conclusions. It was seen at the outset that the most pressing question at the present time is that of correlation of studies. With the development of department teaching in the high schools, it becomes necessary to say just what one department is to do for another, and just how all are to work harmoniously for the well-being of the pupil. A series of after-school meetings was held during the school year. An effort was made to raise the discussion as far as possible toward an ideal plane. The result of these discussions is set forth in the following propositions, which have the general acceptance of most of the teachers of the Lowell High School. The form of statement employed herein was adopted as favorable to clearness and conciseness, and as convenient for discussion. The value of the course of study presented at the end will be seen to rest upon the validity and completeness of the statements made in No. XII. Thus this proposed course may be regarded as tentative, awaiting a more perfect determination of the facts of mental development during the High School period.

I.

The subject-matter of all knowledge is conceived of as an organic whole—a universe of truth.

II.

For every individual participating in this universe it is the ideal aim of education to develop the largest possible circle of thought, and to provide for its issuance in the most complete life.

III.

Freedom is an essential to this aim. To secure and perpetuate freedom we have political organization, or the State. As necessary institutions of the State we have schools, to which are entrusted particular provinces in the realization of the ideal aim.

IV.

It is the province of the University to uphold ideals, by revealing their unity in the ideal of life, by extending knowledge through research, and by introducing selected and matured individuals to the highest human vocations.

V.

It is the province of secondary schools to afford the widest possible training for *all* to become useful and worthy citizens of a free State, at the same time preparing and selecting candidates for the University.

VI.

It is the province of elementary schools to deal with those materials of instruction in which all youth must participate in order to determine the direction of further work or training.

VII.

A wise distribution of duties among secondary schools in large communities gives, or will give, to such institutions as the Lowell High School, the special assignment of liberal education looking toward preparation for higher study rather than immediate vocations—other secondary schools differently equipped being supposed to exist in which vocational education predominates.

VIII.

The fields of study in which is found this liberal education are:

1. NATURE (so-called science)—the earth and its life, animal and vegetable; sources of food and the supply of the material of man's implements and works; natural forces, their qualities, measurement and laws; the heavens above and the earth beneath.

2. LANGUAGE.—Forms and relations of words and sentences as expressions of thought; language as an objective field expanding into literature, *i. e.*, classics, ancient and modern, giving noblest forms of expression, yielding moral inspiration through conceptions of beauty and truth, and culminating in creative power or composition.

3. HISTORY.—Building upon (a) nature-study, knowledge of the earth and its creatures; (b) literature (and all arts) as revealing human progress through the leadership of master minds; and contributing to literature for the understanding of subject-matter and by furnishing raw materials for creative work; completing itself in truer conceptions of man in society.

4. MATHEMATICS.—Form and space relations, measurements, developing ideas of number and proportion, and culminating in exact logical process.

5. ART—in some form, preferably drawing, as of widest range and most easily handled; possibly, also music for its rhythm and harmony.

6. PHYSICAL CULTURE AND HYGIENE—under school supervision, but the question of an allotment of regular school time dependent upon the general conditions of the home life of pupils.

IX.

Selection of subjects from the above fields for a course of study for all pupils must be made in accordance with the ideal aim (II) brought within the particular range of the school (secondary). To do otherwise, as, for instance, to ask High School pupils what they will study, is to make education a mere following of instinct or inclination, and not a rational process.

On the other hand, the order and arrangement of subjects selected, time allotment and methods of presentation, must be determined by the mental development of pupils. To do otherwise is to treat all minds in a given period of life as equally competent and mature. Solution of the problem of correlation is thus found in the mental advancement of the pupil—in the ability of certain studies to contribute harmoniously to his development. Selection of subjects being made as indicated above yields the following results:

X.

The course of study must include:

I. NATURE-STUDY OR SCIENCE.—(This outline presupposes a study of physical geography in the elementary school—to include the distribution and configuration of land masses, and the agencies affecting them; the phenomena of the atmosphere; the movements of the ocean; variation in climate as determined by location and elevation; and some investigation of the distribution of plants and animals; this, with other work in science in the elementary school, to lead up to the following course required in the secondary school):

A. *Biology.*—Study of the life, growth and functions of living organisms, plant and animal; to be required because of the value of its information in the proper ordering of man's bodily life, because of its introduction to methods of scientific study and prevalent modes of thought, and because of its elevating influences upon character through a larger appreciation of nature and a larger poetic sympathy.

B. *Chemistry*—as connected with plant and animal life and as the basis of practical arts; extended for certain purposes to a course in simple qualitative experiments with connected reading; to be required because of the value of its information in vegetable economy, in life processes and in practical arts; because of its revelation of the composition of material things; because of its aid in understanding the working of natural forces; and because of its rich field for exercise in analytical problems.

C. *Physics.*—The study and determination of the laws of natural forces and their practical application; to be required because of the value of its information in the practical affairs of every-day life; because of its training in careful observation and exact reasoning; and because of its elevation of character in giving man intellectual mastery over physical environment.

The above studies, for further specification, may be elaborated as follows, it being understood that the extent to which each subject is to be pursued may be varied to suit individual taste or aptitude, plans for particular fields of higher study, or adjustment required by selected work in other fields of the secondary course.

A. BIOLOGY.—Physiology, human and higher animals, based largely on dissection.

Anatomy of some invertebrate forms.

Single-celled plants and animals.

Cell-structure and life in higher plants and animals.

Selected types in order of increasing complexity.

B. CHEMISTRY.—Natural occurrence, properties, and best-known compounds of the common elements; experimental illustration.

Elementary course in qualitative experiments in inorganic chemistry.

C. PHYSICS.—Mechanics of solids and fluids.

Heat-effects in changing temperature, dimensions and physical state.

Sound-propagation, vibration of rods, strings, etc.

Radiance, visible and invisible.

Electricity, electrostatics, electro-kinematics, magnetism and magneto-induction, electro-magnetism.

Physical theory, deeper study of more abstract notions.

The course of study must include:

2. LANGUAGES.

A. *English*—because of our constant need of a perfect command of the mother tongue, and because of the incomparable wealth of its literature in the last four centuries.

B. *Latin*—Because of its universality, because more than any other language it has furnished the forms in which the thought of the western world has found expression. (This fact it not due to any inherent quality of the language so much as to the results of Roman imperial history).

C. *Other Languages*—may be added for collateral study or as substitutes for certain particular parts of other fields.

These are notably:

Greek—because of the logical completeness and harmony of its grammar, the wondrous beauty of its literature, and the eminently sane, wholesome and invigorating spirit breathing everywhere through its masterpieces,—the leaders in Greek thought being true teachers for all time.

German—because of its rugged strength and virility, its reinforcement of certain fundamental English qualities, and its usefulness in higher study.

French—because of its flexibility and polish, the part it has played in the enrichment of English, and its usefulness in higher study.

Particular lines of study to be followed in the above languages are set forth as follows:

A. English.

1. *Literature.*—Distributed about equally in poetry and prose as contrasted vehicles of thought, and segregated into groups, (*a*) intensive and (*b*) extensive. The intensive being centrally or typically related to the extensive, and ranging in amount from one-fifth to one-third of the latter.

2. Developed along certain lines. (*a*) Action or Narrative. First, with the aim to secure a larger connoting of thought with text, and to appreciate new factors of interest in reading; continuing to the perception of organic unity through an analysis of the elements of epic; including finally the play of motive, interaction of character, and rising to an ethical summit in the drama.

(*b*) Descriptive.—Commencing with simple narrative or descriptive text. The analysis of the order and method and recognition of quality in description; the relation of the description to other material with which it is found combined.

(*c*) Didactic and expository.—Study of methods and explication, satire, humor, formal organization of thought.

(*d*) Lyric.—The study of individual reaction against environment in emotion. Poetry of the highest lyric quality. All preceding modes of literature meeting in an esthetic and ethical unity in the novel.

(*e*) Persuasion and argumentation—Preliminary study of elements and methods incidentally illustrated by the general literature, and culminating in the oration.

3. Historically viewed—Commencing with the reflection of a work of literature in time; followed by a recognition of its place, historically, in development; reaching at least to a comprehensive view gained through the masterpieces selected.

II.

Formal Work—in general associated with specially adapted pieces of literature, but at certain classifying and organizing stages presented as disassociated, possibly in connection with text-book.

1. Grammatical.—Opening with review in inductions or the parts of speech and the inflectional forms, fixing classifications; next assuring mastery in formal analysis of the easier types of simple, compound and complex sentences; continuing in the development of syntactical relations and sentence forms in subordination to interpretation and rhetorical analysis. Final comprehensive review.

2. Paragraph form.—Selection of subject. Analysis of construction.

3. Word form.—The word defined by context; etymologically significant; imaginatively treated (tropes); discriminated (synonyms); modified in time (change in form and meaning).

4. Figurative language.—Recognition of all usual thought and form figures, followed by analysis and completed by classification.

5. Metrical construction.—Induction of elements; finally, disposition in classification.

6. Composition form.—Discovery of method by analysis, narrative, descriptive, explication, etc., in connection with literature. Synthesis in inventive work.

7. Style.—All preceding forms finding relation or employment in a thorough study of style.

III.

Composition.—Chiefly arising from and reinforcing literature, but incidentally drawing upon matters of general or individual interest. In later essays the aim is to synthetize areas of literature under some one view—esthetic, ethic or historical.

B. Latin.

The requirement in this subject may be simply stated as the ability to read with readiness classical Latin of the style of Cicero and Virgil. There must then be sufficient exercise in word forms, syntax, translation and prosody to produce this ability. At the same time, to prevent this work from being one-sided and divorced from other subjects, to afford a proper field for apperceptive growth, and to realize those primary reasons for the study of Latin given above, there must be constant use on the part of the pupil of the thought or content read. This side of the work will be simple in the early stages, such as the association or grouping of words of common origin and their English derivatives, the tracing of abstract terms to concrete originals, comparison of ideas expressed by words of similar meaning, the use of words, as acquired, in new associations arranged or invented by the pupil, and as the course proceeds will expand through easy lines of critical study, simple forms of investigation and collateral reading into a sound though partial appreciation of the author's work in literature.

C. Other Languages.

It is not necessary here to elaborate the requirements in Greek, French and German. They will be similar to the requirements in Latin, with some modifications for each particular case.

The course of study must include:

3. HISTORY—because of its vital connection with the subject matter of the classics, because of the larger life that comes through knowledge of the past, and because of its furnishing the best field for the study of the progress of society, and, therefore, the most valuable means of preparing the individual for his place therein.

Particular lines of study to be pursued (to greater or less extent, according to individual needs and the fullness of other subjects) are:

A. *Geography*—Mediterranean basin and Western Europe to insure a solid realization of past life.

B. *Biography*—chiefly ancient, to widen and strengthen the sentiment of humanity and to familiarize with conditions of past life.

C. *English national growth*—for its illustration of the origin and continuity of national life and for explanation of the American offshoot.

D. *Greek communities*—selected types for simple, yet full, explanation of civil questions.

E. *Arts and industries*—as developed upon both Greek and Italian peninsulas, for further understanding of conditions of ancient life and the substance of ancient civilization.

F. *Roman territorial history*—to understand the building of the empire.

G. *Roman political history*—to survey the completed evolution of ancient political forms, the organization of the empire and the perfection of Roman law.

H. *Medieval types and ideals*—for their variety and vividness and for connection between the ancient and modern worlds.

I. *Modern Europe*—based particularly upon France and England; upon France for a close study of social and political forces; and upon England for steady development of national character and maintenance of ideas of liberty.

J. *United States*—for detailed study of institutions and comprehension of the broader relations between individuals and organized society.

The course of study must include:

4. MATHEMATICS—because this subject is the foundation of all quantitative experimentation, a necessity everywhere for practical results; but more especially because it is a study eminently adapted to direct the attention and effort of the student to processes of work, thereby affording a stimulating and inviting exercise of the mental faculties for pure work's sake, and resulting, when properly taught, in conscious mental power. It possesses pre-eminently the following educational ends: exactness, clearness, conciseness and orderliness of expression and procedure. It requires an intelligent appreciation of principles and a clear understanding of reasons therefor, thus counteracting habits of premature generalization. The necessary work must include both pure and applied mathematics.

To meet the above-stated ends, particular branches to be studied (to greater or less extent according to individual needs) are:

A. *Concrete Geometry*—A knowledge of geometrical forms and some of their most obvious relations.

B. *Plane Geometry.*—Systematic treatment of the propositions in the ordinary field of plane geometry and their practical applications. May be supplemented with solid geometry.

C. *Algebra.*—Elementary operations and equations, simple and quadratic.

The course of study must include:

5. DRAWING—for its value as a means of expression and its auxiliary use in the pursuit of other studies, but especially for the cultivation of esthetic appreciation.

6. PHYSICAL CULTURE.—Without special equipment this must be limited to such supervision of outside life as may justly fall within the teacher's observation and advice. Records of physical conditions and development should be kept for the purpose of gaining accurate data for future guidance.

XI.

Intellectual growth is found to pass through certain stages distinguished somewhat as follows (each period or stage including and transforming all that has gone before):

INFANCY. Education, if any, entirely by parents.	Period of sensation, attuition, simple emotions; volition growing.
EARLY CHILDHOOD. Education by parents, affected more or less by example of older children; systematized in the kindergarten.	Period of perception, objective space apprehension; retention involuntary or only feebly voluntary; emotions rising into caprice and fancy; volition strong, but wayward.
CHILDHOOD. Systematic, elementary education in primary and grammar schools.	Period of strengthening recollection; fancy changing into imagination; analytic reflection seeking simple forms; emotions coming more under control; volition more orderly.
YOUTH OR ADOLESCENCE. Period of secondary education.	Period of generally enlarging powers; imaginative and reproductive powers stronger; productive powers less capricious and more rational, expanding into synthetic reflection; constructive thought in conception, judgment and reasoning to discovery (*i. e.*, for the individual) of truth; pure reason working to cause; beginning of rational insight; and of moral ideas—spiritual insight into moral relations.

XII.

The powers or activities of mind to be cultivated during the period of secondary education are as shown above, but may be more briefly designated as follows, together with suitable material drawn from Science, Language, History and Mathematics—the subjects mentioned in the questions of the Conference Committee.

RECOLLECTION.

Science.—Descriptive work on plants or animals.

English.—Narrative and descriptive literature; memorizing; mastery of implemental forms and classifications.

Latin.—Vocabulary; grammatical forms; simpler and more common rules of syntax; rules of prosody.

History.—Biographical and geographical material; story of English national life.

Mathematics.—Fundamental conceptions and operations.

Reproductive Imagination.

Science.—Physiology, human and general.

English.—Study of words connoting concrete images, pictures, experiences, emotions; figures of speech; descriptive writing.

Latin.—Endeavor to reproduce scenes described and the life of peoples met with in the literature read.

History.—Ancient life, Greek or Roman; study of arts and industries.

Mathematics.—Properties of solids, fundamental theorems of plane geometry.

Analytic Reflection (looking toward simple forms).

Science.—Biology, dissection and cell-study; elementary chemistry.

English.—Grammar forms; sentence analysis; definitions, synonyms; rhetorical, logical and esthetic modes of analysis.

Latin.—Translation (both ways); analysis of grammatical forms, as a help toward command of them; etymology and word-formation.

History.—Close study of particular Greek states.

Mathematics.—Algebra.

Synthetic Reflection (employing term, proposition, syllogism).

Science.—Mechanics.

English.—Summaries, abstracts, essays; grouping of formal units of expression; pieces of literature grouped and related from different points of view.

Latin.—Translation (both ways); induction to more complex rules of syntax, word-order and sentence and paragraph structure.

History.—Building of the Roman empire.

Mathematics.—Geometry.

CONSTRUCTIVE THOUGHT (exercising judgment and reaching proof).

Science.—General Physics.

English.—Systematic collateral reading; essay work of synthetic, expository and inventive character.

Latin.—Application of principles in Latin composition.

History.—Roman political development and the foundation of modern European states.

Mathematics.—Geometry; algebra.

REASONING (to find and establish cause).

Science.—Physics and chemistry—theory.

English.—Theory of clause relations, sentence and paragraph sequence; relation of form to expression; study and comparison of style; motive and character in the drama and the novel; argumentative discourse.

History.—Particular forms and ideals of the Middle Ages; play of social and political forces, as in France and England.

Mathematics.—Advanced algebra.

MORAL IDEAS.

English.—Study of ideals and ethical content of masterpieces; esthetic appreciation.

Latin—incidental to portions of literature read, notably Cicero.

History—a wealth of material in the life and character of great men, in the unfolding of moral progress; but especially the study of our national institutions and a realizing sense of personal relations toward them.

COURSE OF STUDY.

Arranged for four years upon the basis of twenty recitations per week of forty-five minutes each, and worked out in accordance with the foregoing propositions. (Although the full number of twenty recitations per week is called for at the beginning, yet the amount of time required in outside preparation is much less in the first year than later). Drawing is introduced for the reasons given in X.

FIRST YEAR.—Age at beginning, 13-14.

Particular aims for this year—quick and accurate recollection, correct and vivid reproductive imagination.

Language—A. English, 4 hours.

Extensive reading of narrative and descriptive literature, prose and poetry, giving a wide range in the world; word-study, etymological and contextual; implemental forms and classifications; narrative and descriptive writing.

B. Latin, 4 hours.

Simple reading to acquire the largest possible vocabulary of common words; grammatical forms; simpler and more common rules of syntax; practice in pronunciation and use of all words acquired.

Science, 3 hours.

Descriptive work on plants or animals; records of observations broadly made; physiology.

History, 4 hours.

Reading and reproduction of selected biographies of ancient history; geography of Mediterranean basin and Western Europe; story of English national life; more detailed study of ancient arts and industries.

Mathematics, 2 hours.

Study of geometrical forms, drill to strengthen the power to bring them easily before the mind in imagination; simple algebraic operations.

Drawing, 3 hours.

a. Drawing from natural objects, as flowers, etc.

b. Representative drawing, including geometrical models, —shading, grouping, perspective.

c. Drawing applied to actual forms—black and white—from casts or models, embracing the study of light and shade.

SECOND YEAR.—Age at beginning, 14-15.

Particular aims for this year—analytic reflection to place simple forms in the mind, accompanied by equal effort in synthesis to apprehend relations; no especial effort to generalize.

Language—A. English, 3 hours.

Systematic course in grammar; sentence analysis, definitions, synonyms; rhetorical, logical and esthetic modes of analysis; summaries, abstracts, essays; grouping of formal units of expression; pieces of literature grouped and related.

B. Latin, 5 hours.

Translation (both ways); analysis of grammatical forms; word-formation; induction to more complex rules of syntax, word order, sentence and paragraph structure.

Science, 4 hours.

Biology, dissection and cell-study; elementary chemistry, mechanics.

History, 3 hours.

Close and analytic study of particular Greek states; military history of the Greeks; building of the Roman Empire.

Mathematics, 4 hours.

Algebra; plane geometry.

Drawing, 1 hour.

Descriptive work as applied in conventional designs, including arrangement, harmony and relation of decoration in various designs, and in use in different industries.

THIRD YEAR.—Age at beginning, 15-16.

Particular aims for this year—constructive thought, employing judgment and arriving at proof; larger power of generalization.

Language—A. English, 3 hours.

Systematic reading; essay work of synthetic, expository and inventive character.

B. Latin, 4 hours.

Extensive rapid reading, and application of principles in Latin composition.

Science, 5 hours.

General physics.

History, 3 hours.

Roman political development; foundation of modern European states; national beginnings.

Mathematics, 5 hours.

Geometry, plane and solid; complete study of algebra.

Greek, French or German elective with science.

Chemistry elective with solid geometry.

FOURTH YEAR.—Age at beginning, 16-17.

Particular aims for this year—reasoning to find and establish cause; reflection directed inward toward clearer apprehension of self in moral relations; contemplation of moral ideals. With the exception of English and United States history and institutions, all studies are elective, subject to approval of principal.

Language—A. English, 4 or 5 hours.

Theory of clause relations, sentence and paragraph sequence; relation of form to expression; study and comparison of style; motive and character in the drama and the novel; argumentative discourse; study of ideals and ethical content of masterpieces.

B. Latin, Greek, French or German, 4 hours.

(According to previous election or particular needs or pupil).

Science, 3 or 4 hours.

Advanced work in physics; theory.

General course for pupils not taking science in third year, 4 hours.

History, 5 hours.

Selected forms and ideals of the Middle Ages; development of modern Europe, based chiefly upon France and England; history and institutions of the United States.

Mathematics, 3 hours.

Required of deficient pupils according to needs; otherwise this time to be assigned according to the pupil's choice and advice of teachers.

A course in instrumental drawing may be given at this time as applied mathematics. It should include:

a. Geometrical problems, mathematical curves, lettering.

b. Descriptive geometry, perspective, isometric perspective, shade and shadows.

c. Drawing of simple machine parts from object.

d. Architectural drawing, including the five orders; study of styles; combination and blending of different styles.

e. History of architectural styles.

RECAPITULATION,

showing time-allotment in hours per week for each year,—elective hours in parenthesis.

Year.	I	II	III	IV
English	4	3	3	5 or 4[1]
Latin	4	5	4	(4)
Greek	. . .	. . .	(5)	(4)
French	. . .	. . .	(5)	(4)
German	. . .	. . .	(5)	(4)
Science	3	4	5[2]	(3) or (4)[3]
History	4	3	3	5[4]
Mathematics	2	4	5[5]	(3)
Drawing	3	1	. .	. . .

1. Number of hours dependent upon amount of work in other languages.

2. Pupils taking Greek, or a modern language, for two years, will postpone this work in science till fourth year.

3. Three hours for those having had science in third year; otherwise four.

4. Elective for half of the year.

5. Elective for part of the year in exchange with chemistry.

COURSE OF STUDY.

POLYTECHNIC HIGH SCHOOL,

(Corner Bush and Stockton Streets)

SAN FRANCISCO, CAL.

1897-1898.

* * *

W. N. BUSH, PRINCIPAL.

* * *

The subjects embraced in the courses of study are: English, (Commercial Forms and Correspondence, Rhetoric and Literature); History, (Civil Government, American History and Debate); Mathematics, (Business Arithmetic, Algebra, Plane and Solid Geometry, Trigonometry and Surveying); Natural Sciences, (Biology, Physics, Chemistry); Modern Languages, (German, Spanish, French); Bookkeeping, Shorthand, Typewriting, Penmanship, Commercial Law, Commercial Geography, Woodwork, Machine and Blacksmith Work, Clay-modeling, Woodcarving, Pen and Ink Drawing, Freehand, Architectural and Mechanical Drawing.

ARRANGEMENT OF STUDIES.

The subjects offered are classified under two heads: The *Commercial Course*, for pupils who desire a strictly commercial training; second, the *General Course,* intended for pupils who may wish a commercial training but desire more latitude in the selection of studies than the Commercial Course offers; also, for pupils preparing themselves for the Normal School, the State University, technological schools, for the trades or office work in architecture and engineering.

In this course are the subjects embraced in *Manual Training,* viz: Shopwork, Drawing, etc., and the academic studies related to them.

Prescribed and Elective Studies of the General Course.

All pupils under eighteen years of age are required to take English and either History or a Science; boys shall take Mathematics. If girls take Bookkeeping, they shall take at least one year of Business Arithmetic; if Physics, they shall take Algebra.

In addition to these *Prescribed* studies pupils shall elect from the other studies embraced in the course a number sufficient to make their total recitations per week equal *eighteen units of work*—a unit of work corresponding to a recitation where the recitation requires forty-five minutes of preparation, a recitation like drawing, that requires no preparation, counting as half a unit.

To insure promotion a pupil must pass in the Prescribed studies and have at least *eighteen units* of work to his credit. In estimating these eighteen units no study will be counted for promotion unless the pupil has received the full number of units to which that subject is entitled.

List of Studies Elected to Be Endorsed by Parent.

The program of study, when arranged by pupil, must receive the endorsement of parent and of the class teacher.

Special Pupils.

Special pupils are admitted to the school on the following conditions: They must be at least eighteen years of age, or graduates of a High School, or present a doctor's certificate that they are unable to comply with the regular requirements.

TWO YEARS' COMMERCIAL COURSE.

Junior A.	Number of Recitations.	Units of Work.	Middle A.	Number of Recitations.	Units of Work.
*English	5	5	*English	5	5
Commercial geography	4	4	Civil government. . .	4	4
Debate	1	1	Debate.	1	1
Penmanship	2	1	Penmanship	2	1
Bookkeeping.	5	5	Bookkeeping	5	5
Business arithmetic. .	4	4	†Business arithmetic and algebra	5	5
Shorthand	4	3	Shorthand	4 or 8	3 or 6
Typewriting	3	1½	Typewriting	6 or 3	3 or 1½

Junior B.	Number of Recitations.	Units of Work.	Middle B.	Number of Recitations.	Units of Work.
*English	5	5	*English	5	5
U. S. history	4	4	Commercial law . . .	4	4
Debate	1	1	Debate.	1	1
Penmanship	2	1	Penmanship	2	2
Bookkeeping.	5	5	Bookkeeping.	5	5
Business arithmetic. .	4	4	†Business arithmetic and algebra	5	5
Shorthand	4	3	Shorthand	8 or 4	6 or 3
Typewriting	3	1½	Typewriting	6 or 3	3 or 1½

* First year.—Two recitations per week to Commercial Forms and Correspondence. Second year.—One recitation per week to Commercial Forms and Correspondence.

† Optional with girls.

For promotion a pupil must pass in eighteen units of work, which shall include all the units credited to the first two subjects in each class of the above program. If a pupil fail to receive in any subject the total number of units assigned to that subject, the partial units shall not be counted in the eighteen necessary for promotion.

GENERAL COURSE.

Junior A. First Year.	Number of Recitations.	Units of Work.
Prescribed.		
English	5	5
Commercial geography and debate	5	5
Penmanship. . . .	2	2
Business arithmetic or algebra for boys	4	4
Elective.		
Bookkeeping . . }	5	5
Business arithmetic for girls . }	4	4
Shorthand.	4	3
Typewriting . . .	3	1^2
Spanish	4	4
German	4	4
French	4	4
Algebra	4	4
Woodwork. . . . }	10	5
Instrumental drawing . . . . }	5	2^2
Freehand drawing	5	2^2
Clay modeling. . .	5	2^2
*Biology	5	5

Middle A. Second Year.	Number of Recitations.	Units of Work.
Prescribed.		
English	5	5
United States history	4	4
Debate.	1	1
Algebra or geometry for boys. . .	4	4
Elective.		
Bookkeeping . . }	5	5
Business arithmetic and algebra for girls . . }	5	5
Shorthand . . . or {	8 4	5 2^2
Typewriting . or {	6 3	3 1^2
Commercial law. .	..	..
Spanish	4	4
German	4	4
French.	4	4
Geometry	4	4
Ironwork . . . . }	10	5
Instrumental drawing . . . . }	5	2^2
Freehand drawing . . . . . .[2] }	5	2^2
Pen and ink drawing . . .[3] }		
Clay modeling . [2] }	5	2^2
Wood-carving . [3] }		
Penmanship. . . .	2	1
†Physics	6	5

Senior A. Third Year.	Number of Recitations.	Units of Work.
Prescribed.		
English	5	5
United States history	4	4
Good government club	1	1
Plane geometry or solid geometry and trigonometry for boys	4	4
Elective.		
Accounting	5	3
Shorthand	8	5
Typewriting . . .	6	3
Political economy.	4	4
Spanish	4	4
German	4	4
French	4	4
Solid geometry . .	4	4
Ironwork . . . . }	10	5
Instrumental drawing . . . . }	5	2^2
Freehand drawing . . . . . .[2] }	5	2^2
Pen and ink drawing . . .[3] }		
Claymodeling . [2] }	5	2^2
Wood carving . [3] }		
‡Chemistry	6	5
Penmanship . . .	2	1

* May be substituted for commercial geography.

† May be substituted for United States history.

‡ May be substituted for history.

Studies in brackets must be taken together.

GENERAL COURSE—Continued.

Junior B. First Year.	Number of Recitations.	Units of Work.	Middle B. Second Year.	Number of Recitations.	Units of Work.	Senior B. Third Year.	Number of Recitations.	Units of Work.
Prescribed.			*Prescribed.*			*Prescribed.*		
English	5	5	English	5	5	English	5	5
U. S. history	4	4	Civil government	4	4	Medieval history	4	4
Debate	1	1	Debate	1	1	Good government club	1	1
Business arithmetic or algebra for boys	4	4	Algebra or geometry for boys	4	4	Plane geometry or solid geometry and trigonometry for boys	4	4
Penmanship	2	2						
Elective.			*Elective.*			*Elective.*		
Bookkeeping Business arithmetic for girls	5 4	5 4	Bookkeeping Business arithmetic and algebra	5 4	5 4	Accounting	5	3
Shorthand	4	3	Shorthand or	8 4	5 2^2	Shorthand	8	5
Typewriting	3	1^2	Typewriting or	6 3	3 1^2	Typewriting	6	3
Spanish	4	4	Commercial law	4	4	Political economy	4	4
German	4	4	Spanish	4	4	Spanish	4	4
French	4	4	Penmanship	2	1	German	4	4
Algebra	4	4	German	4	4	French	4	4
Woodwork Instrumental drawing	10 5	5 2^2	French	4	4	Trigonometry and surveying	4	4
Freehand drawing	5	2^2	Geometry	4	4	Ironwork	8	4
Clay modeling	5	2^2	Ironwork Instrumental drawing	10 5	5 2^2	Instrumental drawing	6	3
*Physics	6	5	Freehand drawing ^{2} Pen and ink drawing ^{3}	5	2^2	Freehand drawing ^{2} Pen and ink drawing ^{3}	5	2^2
			Clay modeling ^{2} Wood carving ^{3}	5	2^2	Clay modeling ^{2} Wood carving ^{3}	5	2^2
			*Physics	6	5	Penmanship	2	1
						*Chemistry	6	5

* May be substituted for United States history.

TEXT-BOOKS.

English.—Genung's Outlines of Rhetoric; Ginn's Irving's Sketch Book; Rolfe's Lady of the Lake; Syle's From Milton to Tennyson; Arden Julius Cæsar and Merchant of Venice; Gayley's Classic Myths; Thurber's Select Essays from Addison; Swinton's Word Analysis.

History.—Fiske's U. S. History; Fiske's Civil Government; Johnson's American Politics; Epochs of American History; Fisher's General History.

Mathematics.—Packard's Commercial Arithmetic; Stringham's Smith's Complete Algebra; Venable or Edward's or Beaman and Smith's Geometry; Bowser's Trigonometry; Wentworth's Surveying.

Bookkeeping.—Williams and Rogers.

Blanks for bookkeeping.

Blank Forms, Drafts, Notes, etc.

Science.—Appleton's Physics; Richardson's Chemistry; Colton's Biology.

Spanish.—Worman's First Spanish Book; De Torno's Spanish Method.

German.—Sheldon's German Grammar; Dreyspring's German Method; Deering's Schiller's Wilhelm Tell.

Tilden's Commercial Geography.

Clark's Commercial Law.

Laughlin's Political Economy.

NORMAL SCHOOL.

Time, One Year.

Requirements for Admission.—A diploma of graduation from the city high schools, or an examination on subjects comprehended by city high schools, or a diploma of graduation from a high school on the University accredited list.

Value of Diploma.—Boards of Education may grant certificates of the grammar grade to holders of San Francisco Normal Class diplomas when recommended by Superintendent of Schools of said city.

PSYCHOLOGY.—Baldwin's Elementary.

PEDAGOGY.—Hailman's. Reference: Spencer, Sully, Porter, Swett's Methods.

PHYSICAL GEOGRAPHY.—No book. Lecture Lesson, with research of best authors.

ENTOMOLOGY.—Lecture Lessons, with specimens and blackboard drawing for Primary Work.

THOROUGH REVIEW OF PRINCIPLES, with methods, of Arithmetic, English Grammar, Orthography and Word Analysis, American History, Civil Government, School Law, Composition, Bookkeeping, Drawing, Reading and Music.

No special text-books are used, but the best authorities consulted.

EVENING SCHOOLS.

[Six years' course, beginning with the third year. Time, two hours per evening.]

PRIMARY DEPARTMENT.

THIRD YEAR (OR GRADE).

Reading.—Revised Second Reader (State) complete.

Spelling (*oral and written*), *Defining and Sentence-making.*—From reader. Pupils should learn the meaning, spelling and use of words at the same time. State Speller, first 20 lessons.

Oral Language.—Reproduction of nature and other stories; framework and covering of body; movement of body.

State Lessons in Language.—First 34 lessons.

Numbers.—Writing and reading numbers to 1,000,000; Roman to C; State Primary Number Lessons complete; 4 gills = 1 pint, 2 pints = 1 quart, 4 quarts = 1 gallon, objectively (secure the measures from the storeroom, through your principal); 12 inches = 1 foot (secure also a rule); 2 nickels = 1 dime, 10 dimes = 1 dollar, two halves = 1 dollar, 4 quarters = 1 dollar; metre = $39\frac{1}{3}$ inches; litre = about a quart; kilogram = $2\frac{1}{5}$ pounds; procure yard and metre rule and other necessary apparatus for teaching, *objectively*, from the storeroom, by requisition on your principal; 60 seconds = 1 minute, 60 minutes = 1 hour, 24 hours = 1 day; add and subtract by twos, threes, fours, fives and sixes to 50; comprehension of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$; division of unit into halves, thirds, fourths, sixths and twelfths, using 12-inch ruler or pieces of paper; reduce halves to fourths, sixths and twelfths; thirds to sixths, and sixths to twelfths. Add ten numbers of two and then three figures each; pupils originate oral problems illustrating their number work. Do the work according to Grube, in "Swett's Methods," page 196, etc., which is also found elsewhere in this manual.

Geography.—State text-books in hands of teacher. Teach the shape of the earth. Geography and History of San Francisco and vicinity. Geography and History of the State and of the Pacific Coast. Pay special attention to climate, surface, productions, occupations, exchange of products (commerce). Lead pupils to see reasons for location of cities and locate San Francisco, Oakland, Alameda, Berkeley, San Jose, Santa Cruz, Stockton, Fresno, Los Angeles, San Diego, Portland, Vancouver, Victoria, Seattle, Olympia and Phœnix. History and Geography of the U. S.; (1) Atlantic Slope; (2) Gulf States; (3) Mississippi States, and (4) Great Plane. Locate, with reasons for location, Boston, New York, Baltimore, Washington, Philadelphia, Chicago, St. Louis, Denver, Galveston, New Orleans, Salt Lake City. Short biographies of Marshall, Fremont, Washington, Lincoln, Grant, Garfield and Franklin. Books for supplemental reading: Geographical readers, History Series, Boys of '76, Boys of '61. Elementary Histories.

Rules of Health.—State Physiology in hands of teacher.

Humane Education.—Heart Culture, Book II, in hands of teacher.

Writing.—California Vertical, Book No. 2.

FOURTH YEAR (OR GRADE).

Reading.—Revised Third Reader (State), complete; teacher to read preface; memorizing, reciting.

Spelling (oral and written), Defining, Sentence-making.—From reader and other text-books. State Speller, lessons 21 to 100 inclusive.

Language.—State Language Lessons, lessons 35 to 84 inclusive; reproduction of stories. Correspondence, including letters of invitation, letters of introduction, letters of application, and letters pertaining to business. Give special attention to use of capitals, the period, interrogation point, exclamation point and common uses of comma.

Written Arithmetic.—State Advanced to page 62, inclusive; multipliers and divisors, not to exceed three figures each; thoroughly review multiplication table to 12 × 12, and division table to 144 ÷ 12; at least three times a week, addition of twelve numbers of three figures each; accuracy, then rapidity; definitions of sum, difference, minuend, subtrahend, multiplicand, multiplier, dividend, divisor, quotient, remainder; review length, weight, liquid capacity, time, metre, litre, gram, kilogram; 16 ounces = 1 pound, 100 pounds = 1 cental (ctl.); 8 quarts = 1 peck; thorough mastery of pages 55 and 56; follow instructions for fourth grade, day.

Mental Arithmetic.—Bailey's to page 35 inclusive, except page 13; accuracy, speed.

Geography.—State Elementary to page 62.

History.—Supplementary readers.

Health Lessons.—Short talks; State Physiology in hands of teacher.

Humane Education.—Heart Culture, Book III, in hands of teacher.

Writing.—California Vertical No. 3.

GRAMMAR DEPARTMENT.

FIFTH YEAR (OR GRADE).

Reading.—Revised Fourth Reader (State), to lesson 45, page 108; follow instructions to fifth grade, day.

Spelling (oral and written), Defining, Sentence-making.—From reader and other text-books. State Speller, lessons 101 to 150 inclusive.

Language.—State Lessons in Language, pages 67 to 88 and Part II, 28 lessons. Reproduction of stories from memory. Short written exercises on familiar topics. Thorough drill in business forms and correspondence. Pay particular attention to manner of beginning, closing, folding and addressing letters. Teach pupils to classify sentences according to use. Teach pupils to distinguish the parts of speech and the plural and possessive forms of nouns. Give special attention to punctuation and use of capitals.

Word Analysis.—Swinton, pages 5–18 inclusive, 23, 24, 25.

Written Arithmetic.—State Advanced, pages 63 to 121 inclusive, except exercise 142 and pages 116 to 118 inclusive; follow instructions to teachers of fifth grades, day classes. Metric system. See instructions.

Mental Arithmetic.—Bailey's, pages 35 to 66 inclusive.

Business Forms.—Ward's No. 1 in hands of teacher. See instructions.

Geography.—State Elementary completed from page 63 inclusive.

History.—From supplementary or library books; Columbus, Da Gama, Vespucci, Cortez, Pizarro, Balboa, Magellan, Cabots, De Leon, Smith, Hudson, the Pilgrims.

Health Lessons.—State Physiology in hands of teacher. Importance of exercise; evils of over and insufficient exercise; effects of alcohol and tobacco on the heart.

Humane Education.—Heart Culture, Book IV, in hands of teacher.

Writing—California Vertical No. 4.

SIXTH YEAR (OR GRADE).

Reading.—Revised Fourth Reader (State), completed from page 108; follow instructions to fifth grade, day.

Spelling (oral and written), Defining, Sentence-making.—From reader and other text-books; State Speller, lessons 101 to 250 inclusive.

Word Analysis.—Swinton, pages 5 to 40 inclusive, 125, 126; further drill on same roots in spelling and defining; note particularly words connected with the word analysis lessons as they occur in other studies.

Grammar and Composition.—State Advanced Grammar (revised), part 1, teacher to read the preface.

Written Arithmetic.—From page 122 to Circular Measure on page 146, omitting exercises 176, 178, 179, 181, 182, 185; take Time, U. S. Money to problem 56; take pages 181 to 184 inclusive; 204 and 205; follow instructions to teachers of sixth grade, day classes. Metric System, see instructions.

Mental Arithmetic—Bailey, pages 57 to 65 inclusive; 81 and ordinary long measure table on 82; 84 and 85 and counting and paper tables on 86; 74 to 99 inclusive, omitting square and cubic measure; 101 and 102.

Business Forms.—Ward's No. 2 in hands of teacher. See instructions.

Geography.—State advanced, pages 43–89 inclusive.

History.—Harr Wagner's Pacific Coast History, complete, in hands of teacher.

Health Lessons.—State Physiology, pages 151–224 inclusive.

Writing.—California Vertical No. 5.

SEVENTH YEAR (OR GRADE).

Reading.—State U. S. History to page 189.

Spelling (oral and written), Defining, Sentence-making.—From reader, geography and other text-books; State Speller, lessons 251 to 350.

Word Analysis.—Swinton, pages 41 to 75; teacher to be governed further by instructions to sixth grade.

Grammar and Composition.—State Grammar in hands of teacher; pages 99 to 194 inclusive; teacher to read preface.

Written Arithmetic.—State Advanced; review factors and multiples; review pages 89 to 102 inclusive; pages 126 to 139 inclusive; tables on pages 154 to 167 inclusive; page 171, problems 56 to 65 inclusive; 181 to 213 inclusive; follow instructions, seventh grade, day.

Mental Arithmetic.—Bailey, pages 66 to 122 inclusive, omitting apothecaries' weight and fluid measure.

Business Forms.—Ward's No. 3 in hands of teacher. See instructions.

Geography.—State Advanced, first 40 pages.

Health Lessons.—State Physiology, pages 7 to 82 inclusive.

Writing—California Vertical No. 6.

EIGHTH YEAR (OR GRADE).

Reading.—U. S. History (State), completed from page 190, and Dole's "The American Citizen."

Spelling (oral and written), Defining and Sentence-making.—From text-books; State Speller, lessons 351 to 408, inclusive.

Word Analysis.—Swinton, pages 75 to 104 inclusive.

Grammar and Composition.—State Grammar in hands of teacher, completed from lesson 195, inclusive.

Written Arithmetic.—State Advanced, pages 146 to 154, inclusive, omitting Time; pages 172 to 180; from Partial Payments, page 214; complete the book, omitting cube root and all problems involving cube root; review thoroughly all tables of denominate numbers, including metric; follow instructions to eighth grade, day.

Mental Arithmetic.—Bailey complete from page 123, omitting pages 141 to 155 inclusive; take pages 13, 156, 157, 158.

Business Forms.—Ward's No. 4 in hands of teacher. See instructions.

Geography.—State Advanced, pages 92–142.

Physics.—Properties of Matter; Dynamics of Fluids, and Heat.

Health Lessons.—State Physiology, pages 83–148 and 237–245, inclusive.

Writing.—Ward's Business Forms No. 4.

ADVANCED EIGHTH GRADE.

Reading.—Complete the United States History and Dole's "The American Citizen."

Spelling.—Same as eighth grade.

Literature.—Select American Classics; Julius Cæsar, leaflet form; in connection with them lessons 248 to 254, State Grammar.

Grammar, Composition and Rhetorical Analysis.—State Grammar completed.

Word Analysis.—Swinton, same as eighth grade.

Arithmetic.—Rapid and accurate addition, and a review of those sections of State Arithmetic pertaining to commercial operations; complete the work for eighth grade; metric system.

Mental Arithmetic.—Bailey, as for eighth grade.

Geography.—State Geography completed.

Physics.—Mechanics, Electricity, Light and Sound.

Health Lessons.—Same as eighth grade.

Civil Government.—State text-book in hands of teacher, to be used with "The American Citizen."

Debating, Essays, Declamation.—Some Manual of Parliamentary Usage in hands of teacher.

Bookkeeping.—Bryant & Stratton's Elementary (Common School), Single and Double Entry; Statements; Commercial Forms.

Music.—Natural Music System.

NOTES.

Elementary science—nature studies—is to be inculcated through the geographies and supplementary readers as the topics arise.

As in the day course, should changes in instructions be deemed advisable as the work proceeds, they can be made by special circular.

Principals and teachers of evening schools will familiarize themselves with the Instructions and Course of Study for the Day Schools, and be governed by them as far as they apply.

Special attention must be given, in all the grades, to forming correct habits of cleanliness, neatness, punctuality, honesty, truthfulness, obedience, kindness and politeness. Pupils should be required to memorize rules of conduct, maxims, etc.

Graduates of the eighth grades pass to the Evening High School.

Pupils of all the grades should be taught selected songs.

HIGH SCHOOL DEPARTMENT.

The subjects taught in the Evening High School classes shall be English, Mathematics, History, Science, Civil Government, Latin and Spanish.

There shall be a two years' course, but the studies shall be so arranged that the first year's course may be complete in itself.

FIRST YEAR (Junior).

1. *Arithmetic.* Parts not taken up in Grammar grades. The Metric System.

2. *Algebra.* Short Course through equations of first degree.

3. *Geometry.* Selected Propositions.

4. *Physics.* Short Course, comprehending the main divisions of Physics, with experiments and laboratory work.

5. *English.* Grammar, Composition, Rhetoric, Literature, Word Analysis, Debates.

6. *Civil Government.* Municipal, State and National Affairs, Duties of Officials, etc.

7. *Latin.* Beginners' Book, Selections from Cæsar.

8. *History.* General History.

9. *German or French.* Substitute for Latin.

SECOND YEAR (Senior).

1. *Algebra.* Review topics of first year; thorough drill in application of principles to problems; quadratic equations; Logarithms; Series.

2. *Geometry.* Plane Geometry; Application of Algebra to Geometry; Geometric Trigonometry (with a view to surveying and navigation).

3. *Physics.* First Year's Course Extended; Physical and Mechanical Problems; Experiments and Laboratory Work; Short Course in Elements of Chemistry.

4. *English.* Composition and Rhetoric; Literature; Essays; Debates.

5. *History.* American History; Lives of American Statesmen; Heroes and Heroines.

6. *Latin.* Grammar; Composition; Selections from the Authors.

7. *Spanish.* Correspondence; Conversation. (The approved method).

8. *German* or *French.* Substitute for Latin. (The approved method.)

Students in the Spanish Class may take up one of the studies in the High School Class. (The same privilege might be granted the pupils in the adult classes.)

Special students may be admitted to one or more of the High School studies (when the classes are not filled by the regular pupils).

Foreign Classes.—The foreign classes shall be graded in accordance with pupils' knowledge of English.

Pupils shall not be admitted to an Evening High School Class later than 7:30, without a permit from the Committee on Night Schools.

COMMERCIAL DEPARTMENT.

ONE YEAR'S COURSE.

I. Theoretical.—Double-entry Bookkeeping, including the use and thorough knowledge of the Day Book, Journal, Journal-Day Book, Ledger, Balance Sheet, Cash Book, Invoice and Sales Books, Bill Book, Double and Single Stub Check Book, Commission Sales Book, Account Sales, Pass Book, Deposit Tickets, Notes, Drafts, Receipts, Bills of Exchange, Single Entry changed to Double Entry, Telegrams, Cablegrams, Commercial Correspondence, Commercial Law and Arithmetic as applied to the foregoing; Penmanship.

II. Practical.—A thorough application of the principles taught in the Theoretical Department given through combination sets, representing San Francisco business houses, specially prepared for the Business Evening School.

POST-GRADUATE COURSE.

A thorough course in advanced Bookkeeping as applied to the commercial, banking, commission and manufacturing business.

STENOGRAPHY AND TYPEWRITING.

A thorough knowledge of stenography, Eclectic or Pitman correspondence; Penmanship.

MECHANICAL DRAWING.

The course prescribed for the Evening Schools.

SPANISH.

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